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THE NEW SYDENHAM SOCIETY.

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VOLUME XXI.

A

HANDBOOK

OF THE PRACTICE OF

FORENSIC MEDICINE,

BASED UPON PERSONAL EXPERIENCE.

BY

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VOL. III.

INCLUDING THE BIO-THANATOLOGY OF NEW-BORN CHILDREN,
AND THE FIRST PART OF

THE BIOLOGICAL DIVISION.

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TRANSLATED FROM THE THIRD EDITION OF THE ORIGINAL BY

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Non hypotheses condo, non opiniones vendito quod vidi, scripsi.

STOERK.

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ON

FORENSIC MEDICINE.

PART SECOND.

THE BIOTHANATOLOGY OF NEW-BORN CHILDREN.

STATUTORY REGULATIONS.

UPON Viability and Monsters: GENERAL COMMON LAW. PART II., TIT. 2, § 2. CIVIL CODE, ART. 312. STATUTE OF 24TH APRIL, 1854. GENERAL COMMON LAW, PART I., TIT. 1, §§ 17 and 18 (*Vide* p. 7, Vol. I.)

On the institution of the Docimasia pulmonaris: CRIMINAL CODE, § 166. REGULATIONS FOR THE PERFORMANCE OF THE MEDICO-LEGAL DISSECTION OF HUMAN BODIES, § 16, &c. (*Vide* pp. 84 and 91, Vol. I.)

PENAL CODE OF THE PRUSSIAN STATES, § 186.—*Whoever buries, or otherwise disposes of a dead body, without the knowledge of the magistrates, is liable to a fine of two hundred dollars* (£30), *or to imprisonment for not more than six months. If a mother bury, or otherwise disposes of the dead body of her illegitimate child, without the knowledge of the magistrates, she is liable to imprisonment for not more than two years.*

ORDINANCE REGARDING THE CARRYING OUT OF THE PENAL CODE FOR THE PRUSSIAN STATES. ART. XII., § 6.—*Whoever has been present at a birth, or has found a new-born child, and has not given due notice thereof, as required by the Civil Code, within the time ap-*

pointed, shall be punished by a fine of one hundred dollars (£15), *or by imprisonment for not more than six months.*

PENAL CODE, § 180.—*If a mother intentionally kills her illegitimate child, either during, or immediately after, its birth, she shall be punished for the infanticide, by imprisonment in bridewell for from five to twenty years. If the child has been intentionally killed by any person other than the mother, or if any other person has assisted in the crime, then the ordinary statutes against murder, homicide, or participation in such crimes, become applicable.*

IBIDEM, § 181.—*Any pregnant woman who, by external or internal means, produces abortion, or the intra-uterine death of the fœtus, shall be punished by imprisonment in bridewell for not more than five years. The same punishment shall be inflicted upon whoever gives or employs such means upon a pregnant woman, even with her own consent.*

§ 182.—*Whoever intentionally produces abortion, or the death of the fœtus in a pregnant woman, without her knowledge or consent, shall be punished with imprisonment in bridewell for from five to twenty years. Should the woman be thereby killed, the punishment is imprisonment for life.*

§ 75. INTRODUCTION.

The doctrines regarding the doubtful life or death of new-born children, in a greater degree than any others in medico-legal science, have been from the earliest times, particularly since the end of last century, and still continue to be, the object of the most diligent inquiries and the most careful observations. Galen mentions the colour of the lungs as a criterion of the child having lived, and the docimasia pulmonaris is almost two hundred years old (Thomas Bartholinus, 1663). So careful a cultivation of this field ought to have ensured its being in a most prosperous condition. But instead of this we find, that up to this very time, on no other question are opinions so much divided as upon this one. But here, that particularly holds good which we have so often to complain of in medico-legal science, that what the dissecting-table has made good the writing-table has spoiled! From the study such a number of doubts, considerations, *à priori* suppositions, and irrelevant judicial controversies have been thrown into the question, that its basis has been shattered over and over again. To allay these doubts and considera-

tions, new modes of investigation, and new modes of obtaining proof of respiration have been again and again devised, every one more complicated than another, and therefore useless in practice, and in recent times particularly, when the so-called "exact" system has commenced to force its way also into judicial medicine, certainly not to its advantage in its practical application for the purposes of the penal code, people have gone so far as to demand an amount of mathematical certainty in the proof of life, as if any such certainty could be required or given in any matters connected with medicine! Those unversed in the matter must truly despair when they read the warnings which Henke, so long a great authority in our science, without, however, the slightest practical forensic experience, that is without having ever observed nature as she is, has continually thrown out in repeated attacks against the docimasia pulmonaris; they will despair when they read the gloomy colours in which Henke and his numerous followers have depicted in the one case an innocent woman unrighteously condemned to the severest punishment, in the other a guilty one just as unrighteously escaping her well-merited chastisement, because the medical jurist has based his decision upon the uncertain and nothing-proving docimasia pulmonaris! I will not adduce the fact, that such warnings have nothing to do either with science or with its practical application, since the physician must give his opinion without any concern as to its consequences. I will not even hint that the supporters of Henke's scepticism in our day come with such warnings *post festum*, now that the point at fault, the theory of strict judicial proof, has been everywhere cast aside, and this has been left to the conscience and judgment of the jury, who take their own course even in purely professional matters, little, if at all, disturbed by the deductions of the medical jurist. The only question to be discussed is, whether these doubts and objections are confirmed by the observation of nature or not. And that question I shall endeavour to answer in the following pages.

There are three questions, as is well known, which, in every forensic case of the kind, are either put by the Judge to the physician, or spontaneously force themselves upon the attention of the latter; these are:—The age of the fœtus, was it viable or mature? Has it, during or immediately after its birth, possessed an independent life? And if the latter be answered affirmatively, then, How has it died? All other questions are accidental, and individual cases often present many such besides those mentioned, specially these for

instance:—How long has the child been dead? that is, when, probably, did the birth occur?—a point that is often of importance for the Judge to know when he has to proceed against the mother. Or, Has the birth been intentionally hastened?—a question which is of as frequent occurrence in practice, particularly in the case of the discovery of immature fœtuses, as it is in by far the larger proportion of cases not to be answered even with any probability. Or questions such as this:—Whether, under the circumstances in which the birth of the child took place, it might have immediately died independent of the injuries found upon it? &c. To answer such collateral questions, the medical jurist must take his material from the circumstances of each individual case; but science supplies the means of answering the three chief questions mentioned above.

CHAPTER I.

AGE OF THE FŒTUS.

§ 76. Fœtus and New-born Child.

The various stages of man's life are no more sharply divided from each other by physical than by mental characteristics, but pass insensibly into each other. This is true collectively as well as individually. It cannot be determined by scientific criteria where childhood ceases and passes into youth or manhood, or what are the bounds which separate manhood from old age. Therefore, in so far as civil rights are connected with these stages, the law has come forward with positive regulations to supply a basis which medical science was unable to give. The best defined of all the stages of man's development from his origin onwards is indubitably that between his intra- and his extra-uterine life, and no subsequent stage is so sharply divided from its predecessor. And yet it is not easy, even here, successfully to draw an exact boundary line for the purpose of penal law. Our statutes make use of three different expressions, which come now to be considered, their interpretation being as it were tacitly presupposed: "Births," "Fœtuses," and "New-born Children." The General Common Law, Part I., Tit. I., § 17, speaks of "Births" without human form or appearance (monsters),—an idea which the penal code has completely set aside, in which, consequently, malformed and well-formed and new-born children, in respect of the general rights of man, of the right to live, are perfectly identical. The penal code itself, however, as paragraphs quoted above show, further employs sometimes the expression "fœtus," and at others that of "child." To distinguish between these two we must in the first place take the extra-uterine life as our basis, just as it is usual in ordinary medical speech to term the child still in the womb, in contra-distinction to a child already born, a "fœtus." This distinction has also been mentally present with the legislator; since he speaks of secretly disposing of the body of an already born, therefore (extra-uterine), new-

born "*child*" (Penal code, § 186), of the discovery of a (consequently once more extra-uterine) "*child*" (Introductory, &c., § 6). On the other hand, he speaks (Penal code, § 181), of the intentional production of the abortion and death of the "*fœtus* in its mother's womb," and (§ 182) of the intentional production of the abortion of the "*fœtus*" of a pregnant woman. But the chief and most important definition, that relating to infanticide, namely in § 180, this distinction is not preserved; since the crime is said to consist in the intentional killing of the illegitimate "child," and that either "*during* or" immediately after its birth,—and here, consequently, the legislator manifestly designates the still intra-uterine "fœtus"—for so long as it is still unborn, it is such—by the term "child." The solution of the doubts and difficulties dependant on the use of the terms "fœtus" and "child" we may, however, very properly leave to the *lawyers*, since they are of no importance to a physician, or in medico-legal practice. The physician will never be asked, whether he considers the birth before him a "fœtus" or a "child," and when he has to decide whether an embryo man has been killed "during," or only "immediately after" his birth, he will know how to deliver his opinion quite unconcerned as to whether the being should be called a "fœtus" or a "child."

There is still another question, however, which may arise, which was brought before us in a recent case, and of which one is not likely, *à priori*, to think; it is this: *Is a mole also a fœtus? The medical man* of the present day, when it is no longer disputed that a mole is the consequence of a fruitful connection, would never hesitate to answer affirmatively.

A servant-girl had accused her master, a physician, of having impregnated her, and of having in the third month of the non-appearance of her menses introduced into her genitals, first "a long instrument," and subsequently repeatedly "small, three-cornered pieces of sponge," the result of these operations being that in a few days "her courses returned in great quantity, and a large lump covered with skin passed from her!" The preliminary investigations in regard to a *provocatio abortus* was instituted, the injured woman was examined by me, and the results of this were such as to compel me to give it as my opinion, that the woman had actually been pregnant, and had aborted. Since, many other suspicious circumstances were otherwise ascertained against the accused, the charge was prosecuted, and he was brought for trial before the jury. Out

of the two days' trial I merely extract the following as pertaining to the present subject. I was asked whether, from the description given by the accuser (and fellow-prisoner at the bar), it was to be supposed that what had passed from her was a "fœtus," since this was a case to which the applicability of § 181 of the penal code was doubtful (*Vid.* this *in extenso*, p. 2, Vol. III.). Of course I had never seen the abortion which had come away more than two years previously, and nothing in regard to it could be produced but the description given above. Of course I could not but declare that this abortion *might* have been a mole, a degenerated ovum, and of the two questions put to me, answer the one—Does a fœtus *live* in the womb of its mother?—affirmatively, and the other—Can a mole *become* a "child?"—negatively. This was the turning-point in the judicial treatment of the case. The public prosecutor declared, that it was a great proof of the wisdom of the legislator that he had not made any mention of a mole in § 181, and that consequently no exception was made in favour of mole pregnancies, since otherwise, this exception might have been brought to bear in the case of every charge of procuring abortion, and the accusation thereby made void; and this all the more, that as the *corpus delicti* could seldom or never be examined, this possibility might be made good in many, if not in most cases. The advocate for the defence, on the other hand, addressed the jury very impressively to the effect, that the legislator had made no mention of a mole, because it was no "fœtus," which "could afterwards become a man," and that, consequently, § 181 did not apply in this case, since the procuring the abortion of a mole was not the crime mentioned in this section, which speaks only of the abortion of a fœtus, etc.! The result of this deduction was the remarkable verdict "not guilty!"

The term "*new-born* child" has also quite as much engaged the attention of the penal lawyer and legislator, and it may become the subject of a medical interpretation, of which Case CCCXXXIV. affords an example. The Bavarian penal code of 1813, art. 242, and that of Oldenburg, art. 169, call a child new-born when it is not yet three days old. On the other hand, according to the Würtemberg penal regulations of 1839, art. 9, according to the penal codes of Saxony and its duchies, and of Brunswick, a child is only new-born so long as it is not more than twenty-four hours old. The renowned criminal jurists Tittman and Stübel, in their outline of a penal code for Saxony, also limit the term new-born to the first twenty-four

hours, whilst the Saxon outline of 1812 limits it to the first few hours after birth only. Gans (on Infanticide, Hannover, 1824) gives the outline of a statute, in which Art. 3, states "it was new-born so long as it was neither fed nor clad, while the mother still laboured under the immediate consequences of the delivery, and while no one besides herself, her parents, and its father, knew of its birth" (!),—a singular definition, which has, however, been adopted by Werner in his handbook of Penal Law.

The new Prussian penal code has incontestably got cleverly out of the difficulty when it calls a child new-born only *implicite* "during or immediately after its birth." (The Austrian penal code says, "At its birth"); * the very relative term "immediately after" truly permits of further discussion. For the determination of the punishment it may be of the greatest importance to decide whether the child has been killed "immediately," or not for some time after its birth, and the medical jurist will of course have to decide at what stage of its short life the child has met its death. Uninfluenced by the various opinions of jurists and legislators above alluded to, he has to take the facts on which to base his opinion from the observation of nature alone.

§ 77. Signs of Recent Birth.

These signs are partly positive, partly negative, and are as follow:—

1. *The skin.*—When the cuticular surface of the child is no longer stained with blood, then the child can be no longer regarded as newly-born, since the mother is not in a situation "immediately after the birth" of a child to be able thoroughly to wash and cleanse it, since that requires deliberation, strength, rest, leisure, and apparatus. Of course it is here presupposed, that no one else has undertaken the duty of cleansing the child, a supposition which befits the greater number of all the cases occurring in practice, which are mostly cases of children born in secrecy and solitude, which appear unwashed upon the dissecting-table. This criterion has rightly been highly estimated from the earliest times,† as bearing reference to the state of

* The Penal Code of Tuscany, art. 316, says:—"at the time of the birth or shortly thereafter;" that of Parma, art. 308:—"just born" (*nato di fresco*); that of Sardinia, art. 571, speaks shortly of a "new-born" child (*un infante di recente nato*).

† *Lex* 2. *Cod. de patribus, etc.* (IV. 43). *Si quis propter nimiam pauper-*

mind of the mother at the time of the possible infanticide. If she have been so far recruited and rested after her confinement as to have been able carefully to cleanse her child, and if she have then murdered it, then her state of mind can no longer be supposed by an equitable Judge (or jury) to be the same as that of a woman in labour, and as such reckoned in her favour. The same thing is so far true, with limitations, of the total absence of the vernix caseosa, particularly from the groins and furrows along the spinal column, as this cuticular secretion is at least of very frequent occurrence in new-born children. We may remark, however, that these criteria are in many cases lost to observation, particularly in all wholly putrefied bodies, or in the case of such children as have been thrown dead or alive into water or other fluids (cesspools, &c.), and been washed therein. So also the dark-red and subsequent icteric coloration of the skin of new-born children ceases to be observed from the spread of the ordinary cadaveric hue, and still more of course from those of putrescence.

2. *Umbilicus and umbilical cord.*—We shall have to resume the consideration of both of these, when we come to consider the signs of live-birth (§ 99); it is self-evident that when the umbilical cord has come away, and the umbilicus is cicatrized—the cord not as it were *torn out* of the navel—then the child can no longer be regarded as a new-born one. Not, however, the reverse. The changes which take place in the umbilical cord, and in the umbilicus itself, the mummification or putrefaction of the cord, with the appearance of a slight inflammatory swelling of the abdominal coverings at its root, with superficial ulceration, or also, when the child has been born alive, the contraction of the umbilical arteries, do not occur "immediately after" the birth. The latter, the contraction of the umbilical arteries in living children occurs indeed, but not sooner than after eight or ten hours; the mummification after two, three, or even four days, and the putrefaction, under conditions which are in general but little favourable to it, is not observable till after the lapse of a much longer time.

3. *The stomach.*—In a new-born child, whether born dead or alive, and that has in the latter case died "immediately after" its birth, the stomach is empty, or, more correctly speaking, it contains a

tatem, etc., filium, filiamve sanguinolentos, *vendiderit, etc.* (evidently meaning children just born—new-born!). Juvenal also, *Sat. VII.*, speaks of a new-born child *à matre rubentem.*

trifling quantity, as much as would be taken up on the point of a knife or half a small teaspoonful, of quite white, transparent, seldom somewhat bloody, inodorous mucus, which is very tough, but is easily removed from the mucous membrane by the handle of a knife. In an advanced stage of putrescence this is frequently found full of large air-bubbles. By no means infrequently, there is also found in the stomach a small quantity of colourless fluid, which must be acknowledged as *liquor amnii*, since the fact, that the fœtus *in ovo* does make movements of deglutition and actually swallows, cannot be doubted (p. 243, Vol. II.). The mere emptiness of the stomach forms indeed no irrefragable proof of the child having died immediately after its birth, because it may possibly have been starved to death, and may yet have lived for one or two days. But *vice versâ*, when milk has been found in the child's stomach, and it is clearly ascertained that no one but the mother has given it, then the child can no longer be regarded as new-born, since the lonely and helpless mother would not be in a condition to give the child nourishment "immediately after" its birth, even if she did intend to bring it up. All that we have said on this head *sub* 1. is also applicable here.

4. *The Lungs.*—We do not require to state, that when the docimasia pulmonaris proves that the child has not breathed, it must then be looked upon as new-born. The same is the case when the examination of the body reveals that the child's life has been but of short duration.

In those countries where the legal period of recent birth is extended by statute till three days after the actual birth, the following signs will have to be added to those already reckoned.

5. *In the large intestines* meconium is still to be found, in its usual well-known form, two, three, or even four days after the birth.

6. *Actual contraction of the umbilical arteries*, which indeed has advanced so far during the first three days of the child's life, that the vessels only with difficulty permit the passage of a very fine sound.

7. The possession by *the centre of ossification* of the femoral epiphysis of a diameter of more than three lines. We shall treat of this diagnostic mark more in detail in §§ 80 and 97. Attention must be paid to this, and it must be used as assistant proof in every case in which it is desirable to ascertain—whether the child is (has lived for) "three days old?" On the other hand,

8. It is not to be deduced from the presence of the *remains of the*

umbilical cord that the child has *only* lived three days, since, as everyone knows, these remains do not drop off at the end of seventy-two hours, but always later, on the fifth or sixth day. And the same may be said still more strongly—

" 9. Of the persistent perviousness of the *ductus Botalli*, the *foramen ovale*, and the *ductus venosus Arantii*. The state of these passages *for the fœtal circulation* is of no value in medico-legal practice generally (§ 100.), and cannot be used to answer the question: has this child lived (only) three days? since they are always open and pervious to the end of this time, and sometimes for much longer.*

CASE CCCXXXIV.—JUDICIAL QUESTION: HAS THIS CHILD BEEN NEWLY-BORN? FALL OF THE CHILD AT ITS BIRTH? DROWNING IN HUMAN ORDURE.

A new-born child was found in a cesspool on the 13th of October, and since there was also a cranial injury visible, we had to make a medico-legal examination of the body next day. The body was that of a male child, nineteen inches and a-half long, and about seven pounds (imp.) in weight. The tongue was not swollen and lay behind the jaws. The body was still quite fresh and had the usual corpse-colour. On its back there were much vernix caseosa, and the whole body was soiled with human ordure (out of the cesspool). The transverse diameter of the head was three inches and a-half, the longitudinal one four inches and a-half, the diagonal one five inches, the diameter of the shoulders was four inches and a-half, the transverse diameter of the chest was three inches and a-half, from back to front it was three inches and a-quarter, and the diameter of the hips was three inches and a-half. There was no down upon the skin, the nails and cartilages were tolerably firm, and both testicles were to be felt in the scrotum. The part of the umbilical cord still attached was half-an-inch long, and had irregular, jagged edges. The diaphragm stood between the fifth and sixth ribs; the stomach contained a little transparent, inodorous mucus; neither the liver nor the kidneys

* The more exact times of their gradual and ultimately complete closure have been determined by the very numerous and careful investigations of Billard, and particularly of Elsässer, and to these we refer. *Vide* Untersuchungen über die Veränderungen im Körper der Neugebornen, u. s. w. Stuttgart, 1853, s. 64, &c.; and also Faber, Anleitung zur gerichtsärztlichen Unters. neugeb. Kinder, u. s. w. Stuttgart, 1855, s. 102, &c.

were remarkably full of blood; there was a large quantity of meconium; the urinary bladder was empty, the vena cava ascendens was tolerably congested. The lungs and heart weighed about three ounces (imp.), the lungs by themselves about one ounce and three-quarters (imp.), their colour was of a bright cinnabar-red, marbled with blue. They floated perfectly, both as a whole and in separate pieces; on incising them crepitation was heard, bloody froth escaped, and pearl-like air-bubbles were very distinctly seen to ascend from them. The trachea and œsophagus were empty, and perfectly normal. The coronary vessels and the cavities of the heart were almost empty. On the posterior half of the uninjured scalp there was an isolated blood coagulum one line thick; the skull bones at the vertex were unusually thin. Precisely on the vertex there was seen on removing the dura mater a faintly semicircular, ecchymosed stripe, running transversely, the result of a fracture, which was indeed partially distinctly fissured, and at these points had jagged edges. The vascular meninges were distended with dark blood, and over the whole brain there was effused a layer half a line thick of similar thickish, half-coagulated blood. The brain itself was already so pultaceous, that it could not be any further examined. The basis cranii was uninjured and the sinuses were much congested. In accordance with these appearances we could not hesitate to assume:—1. That the child had been mature and viable. 2. That it had lived during and after its birth. 3. That it had died from hæmorrhage on the brain; and 4. That the cranial injury discovered must be regarded as the cause of this hæmorrhage. In regard to the probable origin of this injury we did not feel warranted in saying more than—"5. That the supposition that this injury had been produced by the fall of the child at its birth upon a hard floor was not improbable;" that, however, also, 6. "The possibility of this injury having been produced by violence otherwise inflicted could not be denied, though this supposition was much less probable than the former;" and this opinion we were induced to form by the absence of any considerable external injury upon the head (*Vide* § 114). In the first place, the Judge was anxious to know: 7. If the child was yet alive when it fell into the cesspool? We denied this, because the cranial injury, which displayed signs of vital reaction, could not have arisen by falling into the soft mass of ordure, and because there was no signs of death from suffocation (or drowning) present, not even the smallest particle of ordure in the trachea or stomach. The Judge next inquired if the

child were *new-born*? Since, according to the penal code, a child is only to be reckoned as such when it has died during or immediately after its birth: consequently if this child had lived for a longer time, it could no longer be reckoned as new-born, and *the more lenient punishment of infanticide could no longer be applied in favour of the accused.* We decided (for the reasons given in the foregoing §), 8. "That the child was to be regarded as newly-born, and that after the receipt of the cranial injury it must have died in a very short period; that, however, if the cranial injury had not been received during the birth itself, but had been subsequently inflicted, then the child might perhaps have lived one day before the receipt of the injury." (It was not likely to have lived two or more days, as the state of the stomach proved it must have done, wholly without nourishment; in the case also of its having continued to live for more than two days, the small residue of the umbilical cord, which was quite fresh, would already have displayed the commencement of mummification). Finally, we were asked in this case also, as in so many other similar ones, how long a time had probably elapsed since the child was born? and judging from the great freshness of the body, though it had lain in moist and warm human ordure, we stated: 9. "That the child had been born three or four days previously." The mother was never discovered and the case was therefore not further pursued.

§ 78. Immature, Viable, and Mature Child.

The Prussian penal code, as we have already shown (§ 76), recognises only "fœtus" and "child," but no other subdivisions of embryonic life. The word "*abortus*," or any German word corresponding to it, and the word "viable," never occur throughout the whole penal code. The medico-legal practitioner must not, however, delete these words from his terminology. For, besides that these designations have a practical significance in civil cases, complications may also arise in penal cases, which may necessitate the Judge to inquire of the physician regarding the age (degree of maturity) of the child; for instance, when a woman accused of having murdered a certain child which appears to be mature and viable, and is supposed to have been borne by her, denies the latter, and consequently the whole indictment, confessing however, what she cannot deny, that she has borne a child, but asserting that it was immature, and it now remains to be seen whether the medico-legal examination of the mother

and *child* supports her statement (*Vide* Case CCCXXXV). Further, it cannot be denied that the answer to the question whether a child has lived after its birth or no, always more or less depends upon that to the question, whether it has been *capable* of living. Finally, it has already been stated (Gen. Div. § 2. p. 4, vol. I.) that our Royal Ober-Tribunal in interpreting § 186 of the penal code, respecting the secret disposal of the body of an illegitimate child by its mother, has laid down the principle that a non-viable fœtus is not to be regarded as a dead body. Both now, as previously, therefore, the term viability continues to possess an important practical significance.

This is not so much the case with the terms *abortus* and immature fœtus, or indeed, with the "premature" children of many schools. The tendency of the legislature is to justify the consideration of the first two of these terms as identical, since the statutory regulations in regard to the crime of producing abortion speak only of the "fœtus" (Penal code, §§ 181, 182), without giving the slightest definition of its uterine age, or placing any importance upon the different stages of the embryo. A new-born child is, therefore, either immature in whatever month it may have been born, or mature (full-grown, "perfect," "fully developed," according to the old judicial terminology). A mature child, when it is born without any malformation which would make it absolutely impossible for it to continue to live, for instance, with diaphragmatic hernia and prolapse of the abdominal organs into the thorax, with ectopiæ, complete *spina bifida*, &c., is at the same time viable.* But the viability of the human fœtus commences before its maturity, and the question is, what is the *terminus a quo* viability commences? In regard to this, physicians and legislators have from the earliest times diverged from each other, and have laid down the most opposite opinions.† I have already pointed out (p. 10, Vol. I.), that these differences of opinion are of no practical importance wherever the law of the land has expressed itself categorically as to the time when viability shall commence. In this case, the medical jurist has only to determine, whether the child has attained this period, or not? In Prussia, consequently (according to the statutory regulations quoted in § 4,

* Upon the influence of purely fœtal diseases, which are congenital, upon the child's viability, and upon viability generally, *vide* Gen. Div., § 4, p. 7, Vol. I.

† A copious collection of these is to be found in Hübner's work, die Kindestödtung in gerichtsärztlicher Beziehung. Erlangen, 1846, s. 38, &c.

p. 7, Vol. I.):—whether the child has attained the uterine age of one hundred and eighty days at least, or two hundred and ten days respectively?—this is to be done by a due consideration of the stages of development through which the embryo passes in the different months.*

§ 79. Continuation.—The Development of the Embryo according to Months.

About the end of *the first month* (third or fourth week), the embryo is from four to six lines in length. On the cephalic extremity the mouth is already recognisable, and the eyes appear as two points. The extremities resemble wart-like eminences. The heart is recognisable; the liver is disproportionably large. The umbilical vessels are not yet formed.

Second month (up to the end of the eighth week).—About the end of this period the embryo is from fifteen to eighteen lines long. The head is disproportionately large, the nose and lips are already visible. The external ear not yet; the extremities already project a little from the trunk. The anus is marked by a dark point. After the fifth week the umbilical vessels commence to form. About the end of this period the abdomen is closed in. The rudiments of the external parts of generation are visible, but even with a magnifying-glass the sex itself can only be distinguished with difficulty, and not certainly. All the internal organs may now, however, be recognised.

Third month (up to the end of the twelfth week).—The embryo is from two inches to two inches and a-half long, its weight is about one ounce (imp.). The eyelids and the lips meet, so that both the eyes and mouth are closed. The fingers are well separated, and their nails are already recognisable. The clitoris and penis are very prominent, and the sex is recognisable particularly with a magnifying-glass. The thymus gland and the supra-renal capsules are formed. The cerebrum, the cerebellum, and the medulla oblongata, as well as the cavities of the heart, are plainly distinguishable. The

* The question of the viability of the child has been for centuries considered from the most various points of view, by writers upon criminal law, civil law, and even on theology (the Church Fathers). We do not require to enter upon these discussions, as the matter does not belong to the forum of the medical jurist, as we have already pointed out (Gen. Div., § 4, p. 7 &c., Vol. I.).

humerus is three and a-half lines long, the radius two lines and a-half, the ulna three lines, the femur from two to three lines, the tibia from two to three lines, and the fibula two lines and a-half.

About the end of *the fourth month* (the sixteenth week), the embryo weighs about two ounces and a-half to three ounces (imp.), and is from five to six inches long. The skin is of a very rosy colour, and has already a certain amount of consistence. The sex is recognisable without any magnifying-glass, as also a certain peculiar physiognomy of the countenance, in which the very large mouth strikes one. The umbilicus is situated near the pubis. There is meconium in the large intestines, but it is of a light greyish-white colour. The length of the humerus is eight lines, the radius eight lines, the ulna eight lines, the femur from four to five lines, the tibia from four to five lines.

At the end of *the fifth month* (twenty weeks), the embryo is from ten to eleven inches long. From this time onwards, the length of the fœtus gives a means of ascertaining its uterine age approximatively, which is very easily remembered, for the length (in inches) of the fœtus (up to maturity) is approximatively *exactly double the number of the* (*lunar*) *months* it has attained. The weight now commences to vary in individuals, and is, therefore (from this month to maturity), a less safe guide to the age than the length. The fœtus at five months weighs from about seven to ten ounces (imp.). The nails are quite distinct. The hair of the head is visible as a light down. The head is still disproportionately large; the liver, the heart, and the kidneys are also out of all proportion large compared with the other organs. The meconium now begins to be of a pale greenish-yellow colour from the bile, which now begins to be secreted, but it is still not nearly so viscous and pitchy as it subsequently becomes. The length of the humerus is from thirteen to fifteen lines, of the radius twelve lines, of the ulna thirteen lines, of the femur twelve lines, and the tibia and fibula the same.

About the end of *the sixth month* (twenty-four weeks), the fœtus measures from twelve to thirteen inches in length, and weighs from about one pound and a-half to one pound and three-quarters (imp.). The skin is now well covered with down and sebaceous matter. The umbilicus is a little further removed from the pubis. The colour of the fresh body is a dirty cinnabar-red. The meconium is darker and more viscous. The scrotum is empty, the pupillary membrane is still present and distinctly visible without a magnifying-glass. The

length of the humerus is sixteen lines, of the radius sixteen lines, of the ulna seventeen lines, of the femur seventeen lines, and the tibia and fibula the same.

The fœtus of *the seventh month* (up to the twenty-eighth week) is characterized by a length of from fourteen to fifteen inches, and a weight of from about three pounds to three pounds and a-half (imp.). The hair is plentiful, and about one-quarter of an inch long. The large fontanelle is still more than one inch and a-half in longitudinal diameter, and all the fontanelles are distinctly to be felt. The skin is of a dirty reddish. The dark olive-green viscous meconium fills the whole of the large intestine. The liver, still very large, is of a deep dark brownish-red. The length of the humerus is from twenty to twenty-two lines, of the radius seventeen lines, of the ulna eighteen lines, of the femur, tibia, and fibula, each from nineteen to twenty-one lines.

The eighth month is the most important in all the embryonic life in a medico-legal point of view, because at the end of the thirtieth week (two hundred and ten days) the fœtus indubitably, and according to statutory declaration, commences to be viable. About this time it is from fifteen to sixteen inches long, and from about three to five pounds (imp.) heavy. The chief criteria are a brighter flesh-colour than formerly, the disappearance of the pupillary membrane and the descent of the testicles into the scrotum, or at least to the abdominal rings. The gaping vulva permits the clitoris to be distinctly visible. The nails have almost grown to the ends of the fingers. The humerus is from twenty-three to twenty-four lines long, the radius from eighteen to nineteen lines long, the ulna twenty-two to twenty-three lines, the femur twenty-four lines, and the tibia and fibula each from twenty-one to twenty-three lines long.

In *the ninth month* (up to the end of the thirty-sixth week), the fœtus is from seventeen to eighteen inches long, and already nearly six pounds (imp.) heavy. The scrotum begins to be corrugated, and the vulva to close. The head is better covered with hair, whilst during this month the down begins to disappear.

During the course and at the end of *the tenth month* (fortieth week), the fœtus becomes mature.

§ 80. Continuation.—Signs of Maturity of the Fœtus.

A fœtus arrived at maturity (come to the full time, perfect, or fully developed) is easily recognised during life as well as after death. Even a tolerable amount of putrefaction does not disturb the diagnosis, which only becomes doubtful when considerable destruction has been caused by putrescence, bursting of the skull-bones for example, or the loss of individual parts of the body, &c. And even the bare bones themselves, when exhumed, are still capable of giving the requisite amount of certainty on which to base an opinion; wherefore I have already described the dimensions, at least of the bones of the extremities, at the various uterine ages of the embryo, and further on I shall give those of the more important bones of the skeleton of the mature fœtus.*

The fresh body of a mature new-born child displays at once: 1. A certain general *habitus*, which an expert who has seen many such bodies is not apt readily to forget. 2. The firm tense skin, which, in even a moderately well-nourished child, is no longer wrinkled, but well stuffed out, is of the usual pale corpse-colour, and not the dirty brown or cinnabar-red of the earlier months. 3. *The down* has already disappeared; though its remains may still be found on the shoulders of every mature child, and one must take care not to be thereby induced to call the child immature. 4. The head is certainly more or less, but in most cases very distinctly, covered with *hair* about three-quarters of an inch long. 5. The skull-bones are not remarkably moveable, the large *fontanelle* averages from one inch to three-quarters of an inch in length. 6. As for *the weight* and *length* of the body; and 7. The *diameters* of the head, the shoulders, and hips,† the Table hereto annexed, containing the results of two hundred and forty-seven new investigations, gives the following numerical averages.‡

* *Vide* the accurate collection of all the known measurements of the fœtal skeleton, in Kanzler's treatise, quoted at p. 68, Vol. I.

† The diameters of *the chest* are described in the Table given further on (in § 85).

‡ The first hundred and seventeen cases I have taken from my own medico-legal cases, and *only from perfectly fresh bodies.* The measurements and weights of all the other cases have been taken, at my desire, by two of the best of my former students, who were subsequently assistant-physicians in our two Royal Lying-in Institutions, Prof. Hekker, now at Munich, and Dr. Rabe. There is not the slightest reason for doubting the correctness of their work.

Weights and Measurements of Two Hundred and Forty-Seven Mature New-born Children.*

No.	Male.	Female.	Weight.	Length.	Diameter of Head. Transverse.	Diameter of Head. Longitudinal.	Diameter of Head. Diagonal.	Diameter across shoulders.	Diameter of Hips.
			Lbs.	Inches.					
1	—	1	6⅜	18	3½	4	5	4	3
2	1	—	6⅛	19	3	4½	5	5	3
3	—	1	6⅝	20	3½	4	5	4⅜	3
4	1	—	7	20	3¼	4	4⅞	5	3
5	—	1	7	19½	3¼	4	5	4½	3
6	—	1	7¾	19½	3½	4	5	4⅝	3
7	1	—	6	19	3	4	4⅞	4⅜	3
8	—	1	7½	20	3⅛	4	5	5	3
9	1	—	7	21	3	4	4½	5	3
10	—	1	6	18	3¼	4	4¾	4⅜	2⅞
11	1	—	8	20	3¼	4½	5	5	3¼
12	—	1	6	18½	3½	4	4⅝	5	3
13	1	—	7⅝	20½	3½	4⅓	5½	5½	3
14	1	—	8	19	3½	4¼	5⅓	5	3¼
15	—	1	7	20	3¼	4	5	5	3¼
16	—	1	6	18	3	4	4½	4⅜	2⅞
17	1	—	9	20	3½	4¼	5	5½	3½
18	1	—	6	20½	3½	4	5	5½	3¼
19	—	1	6½	20	3½	3⅞	4⅝	4½	3¼
20	1	—	7	19	3¼	4¼	4⅝	4⅜	3
21	—	1	8½	20	3¼	4¼	5	5½	3¼
22	1	—	8	20	3½	4¼	5⅛	5¼	3¼
23	—	1	8	20	3½	4¼	4½	5	3½
24	—	1	5	19	3	3½	4½	4	3
25	—	1	6¼	20	3¼	4	4⅝	5	3¼
26	—	1	5	18	2¾	4	4½	4¼	2⅛
27	1	—	5	19	3	4¼	4⅝	4⅜	2⅝
28	—	1	8	20	3¼	4½	5	5½	3½
29	1	—	5⅛	18	3¼	4¼	5	4½	2⅝
30	—	1	6¾	18¾	3¼	4	5	5	3¼
31	—	1	6	19	3	3⅝	4½	4¾	3
32	—	1	7	19½	3½	4	5	5	3
33	1	—	6½	19	3¼	4	5	4⅝	3
34	1	—	7	20	3⅛	4¼	5	5	3¼
35	1	—	10	22	3⅝	5	6	6	3¾
36	—	1	6½	19	3⅛	4⅛	5	5	3
37	1	—	7	20	3⅛	4⅛	5	5⅛	3¼
38	—	1	7¾	19½	3	4¼	5	4⅛	3⅛
39	1	—	8⅝	19	3	4	5	5¼	4
40	—	1	6⅛	18	3	4	4⅛	4¼	3
41	—	1	7	20	3	4⅛	5	5	3⅛
42	1	—	5	18	3	3⅛	4	4⅛	3¼
43	1	—	10	20¼	3⅛	4⅜	5⅛	6¾	4¾
44	—	1	6½	19	3⅛	3⅝	4¼	4⅝	3⅜
45	—	1	6⅝	19	3	4	5	4⅜	3⅛
46	1	—	7½	18	3⅛	3⅝	5	5⅜	3⅛
47	1	—	6¼	19¾	3	4	4⅜	4⅜	3⅛
48	—	1	7	19	3¼	4	5	5	3⅛
49	1	—	7	20	3	4	5	5	3⅝
50	1	—	7½	20	3	4	4⅜	5⅛	3
51	—	1	5½	20	3	4⅛	4⅜	4	2⅝
52	1	—	6⅝	19⅛	3⅛	4¼	5¼	5⅛	4
53	—	1	9	20¼	3⅛	4¼	5¼	5	4
54	1	—	8⅛	20	3¼	4	4⅜	5	4⅝
55	1	—	8	20	3¼	4¼	4⅛	4⅜	4
56	1	—	6⅛	19½	3	4¼	5	5	3⅛
57	—	1	6½	19	3	4	4⅛	4⅜	4⅛
58	—	1	5	18⅛	3	3⅜	4⅜	3⅜	3
59	—	1	6	19	3	3⅜	4⅛	4¼	3
60	1	—	6	19½	3¼	4¼	4¾	5	4
61	—	1	7	21	3⅛	4⅛	5	5⅛	3⅛
62	1	—	7⅜	19½	3	4¼	5	4⅛	3¼
63	—	1	8⅜	19	3	4	5	5⅛	4
64	1	—	6½	18	3	4	4⅛	4¼	3
65	—	1	7	20	3	4¼	5	5	3⅛
66	1	—	10	20½	3⅛	4⅜	5⅛	6¾	4⅝
67	1	—	7⅛	20	3⅛	4¼	5	5¼	3¼
68	—	1	6½	18	3⅛	4⅛	5	4⅛	3¼
69	—	1	6⅜	19	3⅛	3⅜	4⅜	4⅜	3⅝
70	—	1	6⅜	19	3	4	5	4⅜	3⅛

* The weights are given in Prussian commercial pounds and fractions, the measurements in Rhenish inches. Each Prussian commercial pound contains 7217½ grs. imp., 100 lbs. Pr. = 103½ lbs. imp. The Rhenish foot contains 12.356 British inches. The differences in the weight and measurements of a child are not great enough to be of any importance; but it is right to mention that the original figures are adhered to.—Transl.

WEIGHTS AND MEASUREMENTS—*Continued.*

No.	Male.	Female.	Weight.	Length.	Diameter of Head.			Diameter across shoulders.	Diameter of Hips.	No.	Male.	Female.	Weight.	Length.	Diameter of Head.			Diameter across shoulders.	Diameter of Hips.
					Transverse.	Longitudinal.	Diagonal.								Transverse.	Longitudinal.	Diagonal.		
			Lbs.	Inches.									Lbs.	Inches.					
71	1	—	7½	18	3½	3¾	5	5¾	3½	115	—	1	5½	18½	3	3¾	4¼	4¼	3
72	1	—	6¼	19¾	3	4	4¾	4¾	3½	116	—	1	7½	21	3½	4½	5	4½	3½
73	—	1	7	19½	3½	4	5	5	3½	117	1	—	9	21	3	4½	5¼	5	4
74	1	—	7	20	3	4	5	5	3¾	118	—	1	8	18½	3½	4½	5	—	—
75	1	—	7½	20	3	4	4¾	5¼	3	119	1	—	7½	18	3½	4⅜	5	—	—
76	—	1	5½	20	3	4½	4¾	4	2¾	120	—	1	7	18	3½	4½	4⅞	—	—
77	1	—	6¾	19½	3½	4½	5½	5½	4	121	—	1	7	18	3½	4⅜	5	—	—
78	—	1	6¼	18½	3	3½	4½	4½	3	122	—	1	8	19	3½	4¼	5	—	—
79	1	—	8	19½	3½	4¼	5	4¾	3	123	—	1	6	19	3½	4⅜	4¾	—	—
80	—	1	6	18	3½	4	4¾	5	3	124	1	—	7½	19	3½	4½	5¼	—	—
81	—	1	5	18	3	4	4⅜	4¼	2¾	125	—	1	6	18	3½	4⅜	5	—	—
82	1	—	6½	19½	3½	4¼	5	5	3½	126	—	1	6	17	3¼	4	4¾	—	—
83	1	—	8½	20½	3¼	4	4¾	5	3¾	127	—	1	6½	18	3½	4	4⅞	—	—
84	—	1	6½	20	3½	4	5¼	5¾	4¼	128	—	1	7½	18	3½	4¼	4⅞	—	—
85	1	—	7	20	3	4	5	4⅜	3¼	129	—	1	6½	17	3½	4⅜	5	—	—
86	—	1	5½	19½	3¼	4	5	4¼	3	130	—	1	8	18½	3¼	4¼	5	—	—
87	1	—	6	20	3	4¼	4½	4¼	3	131	1	—	6½	18	3¼	4¼	4¾	—	—
88	1	—	6	19½	3½	4¼	5	4¼	3	132	1	—	7¾	19	3¼	4¼	5⅛	—	—
89	1	—	6½	20	3	4¼	5	4¼	3	133	1	—	6¾	17	3¼	4½	5¼	—	—
90	1	—	6½	18	3	4	4⅜	4⅜	3¼	134	1	—	7	18	3½	4¼	5	—	—
91	1	—	7⅜	20	3¼	4	5¼	4½	3¾	135	1	—	8½	18	3⅛	4¼	5¼	—	—
92	—	1	8¼	21	3¼	4½	5¾	4⅜	4	136	1	—	6¾	18	3¼	4½	4¾	—	—
93	1	—	7	19½	3½	4¼	5	5	4¼	137	1	—	6½	17½	3½	4¼	4⅞	—	—
94	1	—	8	21	3¼	4½	5	4¼	3½	138	1	—	7	18	3½	4⅜	5	—	—
95	1	—	6	17¼	2¾	4	5	4¼	3	139	—	1	9	20	3¼	4½	5	—	—
96	1	—	6	19	3¼	3¾	4½	5	3¼	140	1	—	7	18	3⅜	4⅛	4¾	—	—
97	1	—	7	20	3	4	4½	5	3¾	141	—	1	6	16	3¼	4	4⅜	—	—
98	—	1	5¼	20	3½	4	5	4½	3¼	142	1	—	9½	20	3⅜	4½	5¼	—	—
99	—	1	7	19½	3	4	4⅜	5	3½	143	1	—	7	19	3½	4¼	4⅞	—	—
100	1	—	7	19	3	4	5	5	4¼	144	—	1	7	17½	3½	4⅛	5	—	—
101	—	1	7	20¼	3¼	4¼	5	4	3¼	145	1	—	7½	18	3⅜	4½	5¼	—	—
102	—	1	7½	20	3½	4¼	5	5¼	4	146	1	—	8	19½	3⅜	4½	5⅛	—	—
103	—	1	5½	19	3¼	4¼	4⅜	4½	3¼	147	1	—	7¾	19	3½	4¼	5	—	—
104	—	1	6½	20	3½	4	4⅜	4½	3¼	148	—	1	7	18	3½	4⅜	5⅛	—	—
105	1	—	7	19½	3¼	4¼	5	5	3¼	149	1	—	7	18	3½	4¼	5	—	—
106	—	1	6½	19½	3¼	4½	5	4⅜	3	150	1	—	6	18	3¼	4	4¾	—	—
107	1	—	6	20	3¼	4	4⅜	4¼	3	151	—	1	7½	18	3⅜	4½	4⅞	—	—
108	1	—	7¼	20	3¼	4½	4⅜	4½	3⅜	152	1	—	10½	20	3½	4½	5⅜	—	—
109	—	1	7	20¼	3	4¼	5	4⅜	3¾	153	—	1	8	19	3⅜	4½	5	—	—
110	—	1	8½	21	3½	4½	5	5	4¼	154	—	1	7½	19	3½	4½	5¼	—	—
111	—	1	7	21	3	4¼	5	4⅜	3¾	155	—	1	7¼	18	3½	4¼	5	—	—
112	1	—	7½	20	3	4	5	5	3¼	156	—	1	6⅜	18	3½	4¼	5	—	—
113	—	1	5⅜	17	3	4	4⅜	3½	3	157	1	—	8	18	3½	4¼	5	—	—
114	1	—	7	20½	3¼	4	5	4½	3½	158	1	—	7½	19	3½	4½	5¼	—	—

WEIGHTS AND MEASUREMENTS—*Continued.*

No.	Male.	Female.	Weight.	Length.	Diameter of Head. Transverse.	Diameter of Head. Longitudinal.	Diameter of Head. Diagonal.	Diameter across Shoulders.	Diameter of Hips.
	♂	♀	Lbs.	Inches.					
159	—	1	7½	18	3½	4¼	5	—	—
160	1	—	6½	17	3¼	4	4⅞	—	—
161	—	1	5½	17	3½	4	4⅞	—	—
162	1	—	6½	17	3⅜	4	4⅜	—	—
163	—	1	8	19	3½	4½	5⅛	—	—
164	1	—	8	19	3½	4½	5¼	—	—
165	—	1	6½	18	3½	4¼	5	—	—
166	1	—	7	18	3½	4¼	5	—	—
167	—	1	7	17	3½	4¼	5	—	—
168	1	—	8	19	3¼	4⅜	4⅞	—	—
169	—	1	6½	18	3⅜	4⅛	4¼	—	—
170	—	1	8	19	3⅜	4¼	5	—	—
171	—	1	8½	18	3½	4¼	4⅞	—	—
172	1	—	6½	19	3¼	4⅛	5	—	—
173	—	1	6	17	3	3⅝	4½	—	—
174	1	—	7	18	3½	4¼	4⅞	—	—
175	1	—	9	19	3½	4¼	5	—	—
176	1	—	8	17	3½	4¼	4⅜	—	—
177	—	1	5⅜	16	3⅜	4	4¼	—	—
178	—	1	6¾	18½	3¼	4	4⅞	—	—
179	1	—	8	19	3½	4½	5	—	—
180	1	—	6½	17½	3½	4⅛	5	—	—
181	—	1	7	18	3⅜	4¼	4⅞	—	—
182	1	—	7	19	3½	4¼	5	—	—
183	1	—	8	17	3¼	4¼	5	—	—
184	1	—	7	17	3⅜	4⅜	5¼	—	—
185	—	1	6	17	3½	4¼	5	—	—
186	—	1	5	19	3⅛	4	4¾	—	—
187	—	1	7	19	3½	4½	5⅛	—	—
188	—	1	6	17	3¼	4	4¾	—	—
189	1	—	6	17	3¼	4¼	4¾	—	—
190	—	1	7	19	3½	4¼	5	—	—
191	1	—	8	19	3⅜	4¼	5	—	—
192	1	—	6½	17½	3½	4	4¾	—	—
193	1	—	6	17	3¼	4¼	4⅞	—	—
194	1	—	8	19	3½	4	5	—	—
195	1	—	5	16	3¼	4	4¾	—	—
196	—	1	6½	18	3¼	4	4¾	—	—
197	—	1	6	17	3¼	4⅛	4¾	—	—
198	—	1	7	17	3¼	4¼	4¾	—	—
199	—	1	8	19	3½	4¼	5	—	—
200	1	—	7	18	3½	4¼	5	—	—
201	—	1	6¾	18	3¼	4¼	4¾	—	—
202	1	—	8	18	3½	4¼	5	—	—
203	1	—	9	20	3½	4¼	5⅛	—	—

No.	Male.	Female.	Weight.	Length.	Diameter of Head. Transverse.	Diameter of Head. Longitudinal.	Diameter of Head. Diagonal.	Diameter across Shoulders.	Diameter of Hips.
			Lbs.	Inches.					
204	1	—	8	18	3½	4¼	5	—	—
205	1	—	6½	18	3⅜	4¼	5	—	—
206	1	—	7½	19	3½	4⅛	5	—	—
207	1	—	7	19	3¼	4	4¾	—	—
208	—	1	6	17¾	—	—	—	—	—
209	—	1	6¾	18	—	—	—	—	—
210	1	—	6⅛	18½	—	—	—	—	—
211	1	—	4½	18	—	—	—	—	—
212	—	1	7½	18½	—	—	—	—	—
213	1	—	6½	17½	—	—	—	—	—
214	—	1	6¾	18½	—	—	—	—	—
215	—	1	8	19¼	—	—	—	—	—
216	1	—	7½	18½	—	—	—	—	—
217	1	—	7½	19	—	—	—	—	—
218	1	—	7	18½	—	—	—	—	—
219	1	—	6½	17½	—	—	—	—	—
220	1	—	6½	18	—	—	—	—	—
221	1	—	8	20	—	—	—	—	—
222	—	1	6	18	—	—	—	—	—
223	1	—	7	19	—	—	—	—	—
224	1	—	7½	19	—	—	—	—	—
225	1	—	8¾	20	—	—	—	—	—
226	1	—	6½	18	—	—	—	—	—
227	1	—	7½	18½	—	—	—	—	—
228	1	—	7½	19	—	—	—	—	—
229	1	—	9⅜	20	—	—	—	—	—
230	1	—	7¾	19	—	—	—	—	—
231	1	—	7	18	—	—	—	—	—
232	—	1	7	18¾	—	—	—	—	—
233	—	1	6⅛	18	—	—	—	—	—
234	—	1	6½	17½	—	—	—	—	—
235	—	1	9	19	—	—	—	—	—
236	1	—	5¾	18	—	—	—	—	—
237	1	—	8¼	19½	—	—	—	—	—
238	—	1	6½	18	—	—	—	—	—
239	—	1	6½	19	—	—	—	—	—
240	—	1	6½	18½	—	—	—	—	—
241	—	1	8	19½	—	—	—	—	—
242	1	—	9¼	20	—	—	—	—	—
243	1	—	6½	18½	—	—	—	—	—
241	—	1	6	18	—	—	—	—	—
245	—	1	6½	18	—	—	—	—	—
246	1	—	7½	19½	—	—	—	—	—
247	—	1	8¾	19	—	—	—	—	—
	130	117							

In 247 mature children *the average length* of the body in both sexes was - - - - - 18½ inches

The average length of 130 male children was - - - - - 19⅝ „

The average length of 117 female children was - - - 18⅝ „

In 247 mature children *the average weight* of both sexes was - - - - - 7$\frac{1}{20}$ lbs.

The average weight of 130 male children was - - - - - 7½ „

The average weight of 117 female children was - - - 6¾ „

The *maximum length* attained was

in one boy - - -	22 inches	
in 38 boys - - -	20 „	and upwards
in 4 girls - - -	21 „	
in 23 girls - - -	20 „	and upwards

The *minimum length* attained was

in one boy - - -	16 inches
in 8 boys - - -	17 „
in 4 boys - - -	17½ „
in 2 girls - - -	16 „
in 13 girls - -	17 to 17 „

The *maximum weight* attained was

in 4 boys - - -	10 lbs.
in 7 boys - -	9 to 10 „
in 26 boys - -	8 „ 9 „
in 3 girls - -	9 „ 10 „
in 16 girls - -	8 „ 9 „

The *minimum weight* attained was

in one boy - - -	4½ lbs.
in 7 boys - -	under 6 „
in 14 girls - -	„ 6 „

In 207 mature children the *average diameter of the head* was

Transversely - - -	3½ inches
Longitudinally - -	4⅛ „
Diagonally - - -	4⅞ „

The *average diameter across the shoulders* in 117 mature children was 4⅛ inches.

The *average diameter across the hips* in 117 mature children was $3\frac{5}{13}$ inches.

8. The *nails* in mature children feel horny, and not like skin, as in the earlier months, they reach the tips of the fingers, but never those of the toes.

9. The *cartilages* of the ears and nose feel tolerably like cartilage, and not like mere folds of skin, as previously. The most infallible proof, however, of an already advanced condition of ossification is to be found in the presence of—

10. The *centre of ossification* of the inferior femoral epiphysis, and for this, one of the most valuable practical discoveries in forensic medicine, we have to thank Beclard* chiefly, and also the researches of Ollivier† and Mildner.‡ While in the tenth (lunar) month of fœtal life, not one of the epiphyses of the long bones has as yet commenced to ossify; in the second half of this month the centre of ossification of the inferior femoral epiphysis commences to form. The easiest way to find it is to proceed as follows:—a horizontal incision is to be made through the skin and superficial tissues over the knee-joint down to the cartilages, the patella is then to be removed, and the end of the femur made to protrude through the incision. Thin horizontal sections are then to be removed from the cartilaginous epiphysis, at first more boldly, but so soon as a coloured point is observed in the last section, then very carefully, layer by layer, till the greatest diameter of the osseous nucleus is attained. This appears to the naked eye as a more or less circular bright blood-red spot in the midst of the milk-white cartilage, in which vascular convolutions can be distinctly recognised. Figure 24, Plate VIII., gives an unusually correct representation of such an osseous nucleus, which no one can ever mistake, if they have once seen it. My own investigations into the development of this osseous nucleus, which I have to this end extended over children that have lived some time, comprise as yet but one hundred and twenty-five cases, and are included in the following Table.

* Nouveau Journ. de Méd. Chir. et Pharm. Paris, 1819, Tom. iv. p. 107, &c.

† Annales d'Hygiène publique, Tom. xxvii. p. 342.

‡ Prager Vierteljahrsschrift. Prag., 1850. Bd. xxviii. s. 39, &c.

MEASUREMENTS OF THE CENTRE OF OSSIFICATION IN ONE HUNDRED AND TWENTY-FIVE NEW-BORN AND YOUNG CHILDREN.*

Age.	No.	Length.	Wgt.	Diameter of Head.			Osseous Nucleus.	Sex.	Remarks.
				Transverse.	Longitud.	Diagonal.			
		Inches.	Lbs.	Inch.	Inch.	Inch.	lines		
	23	—	—	—	—	—	0	Var.	Partly stillborn, partly dead, shortly after birth. (*Vide* 2nd (German) edition of this work, p. 693.)
In the seventh and eighth solar month.	1	15	—	—	—	—	0	M.	Stillborn.
	1	17¼	—	—	—	—	0	M.	Putrid when born.
	1	15	—	—	—	—	0	F.	Putrid when born.
	1	16	4	2½	3½	4	0	M.	Drowned in a cesspool.
	1	15½	—	—	—	—	0	M.	Stillborn.
	1	14	—	—	—	—	0	F.	Stillborn; had lain in the water for six weeks.
	1	14½	—	—	—	—	0	M.	Stillborn.
	1	13½	—	—	—	—	0	F.	Taken out of the uterus of the drowned mother.
In the ninth solar month.	1	—	—	—	—	—	0	F.	Killed by cutting its throat.
	1	—	—	—	—	—	2	—	Taken putrid out of the water.
	1	18	4	—	—	—	1¾	M.	
	1	17¾	—	—	—	—	0½	F.	Stillborn.
	1	17	5½	3	3¾	4	2	M.	Stillborn.
	1	17¾	5	—	—	—	2	M.	Stillborn.
	1	17¼	6	2¾	4	5	2	M.	Stillborn; found sewed up in a towel.
	1	17	4¾	3	4	4¼	0	—	Found in the water with a fractured skull.
	1	18	5	3	4	4¾	0¾	F.	Stillborn.
Perfectly mature.	11	—	—	—	—	—	2	Var.	Three of these stillborn, four killed by suffocation, and two by cranial injuries. (*Vide* 2nd (German) edition, p. 693.)
	—	—	—	—	—	—	2½	—	
	—	—	—	—	—	—	3	—	
	1	—	—	—	—	—	4	M.	
	1	20	6½	—	—	—	3	M.	
	1	19½	7	—	—	—	1¾	M.	Stillborn.
	1	19	—	3¼	4	4¾	1¼	F.	Stillborn.
	1	19½	7	3½	4¼	5	3	—	Found putrid in a ditch.
	1	19	6	3¼	3¾	4½	1½	M.	Stillborn.
	1	20	5¼	3½	4	5	2½	M.	Found putrid; killed by cranial injuries (ossification defective).
	1	19½	7	3	4	4¾	2	F.	Stillborn.
	1	19	7	3	4	5	1¾	M.	Suffocated.
	1	20¼	7	3¼	4¼	5	3	F.	Killed by a fall at birth.

* Original weights and measurements retained as in former Table, p. 19, Vol. III.

MEASUREMENTS—*Continued.*

Age.	No	Length.	Wgt.	Diameter of Head.			Osseous Nucleus.	Sex.	Remarks.
				Transverse.	Longitud.	Diagonal.			
		Inches.	Lbs.	Inch.	Inch.	Inch.	lines		
Perfectly mature.	1	20	6½	—	—	—	3	F.	Stillborn.
	1	20	7½	3½	4¼	5	2½	F.	Died of cardiac apoplexy.
	1	18	—	—	—	—	1	M.	Drowned; putrid.
	1	19	5½	3¼	4¼	4¾	1	F.	Suffocated in a cesspool.
	1	20	6½	3¼	4	4¾	2¾	F.	Cranial injuries (defective ossification.
	1	19½	7	—	—	—	1½	M.	Putrefied.
	1	19½	6	3¼	4½	5	1¾	F.	Drowned in a cesspool (ossification defective).
	1	21	7	3	4¼	5	3	F.	Died from apoplexy.
	1	20	6½	3	4¼	5	2¾	F.	
	1	21	—	—	—	—	2½	F.	
	1	19½	5½	3¼	4½	5	2¼	F.	Drowned in a chamberpot.
	1	20	6	3	4¼	4½	2½	M.	Found putrid in the water.
	1	19½	6	3½	4¼	5	1	M.	Drowned.
	1	20	7	—	—	—	2	M.	Born alive (ossification defective)
	1	19½	5	3¼	4	4½	0	F.	Stillborn (ossification defective) the large fontanelle 1½ in. long and 1 in. broad.
	1	21	—	—	—	—	1	F.	Found putrid in the water.
	1	—	—	—	—	—	0¾	M.	Stillborn.
	1	20	7	—	—	—	0¾	M.	Stillborn; severe forceps-labour; cranial injuries.
	1	20	7½	3	4	5	1¾	M.	Stillborn; severe labour.
	1	20	7½	—	—	—	2	F.	Putrid.
	1	18	6½	3	4	4¾	1¾	M.	Died from apoplexy.
	1	19	7	—	—	—	1	F.	
	1	20	7¾	3¼	4	5¼	2	M.	Born alive; died from apoplexy.
	1	20	6¾	—	—	—	2	M.	Born alive; died from apoplexy.
	1	20½	7	—	—	—	1¾	M.	Born alive; died from apoplexy.
	1	21	4¾	—	—	—	2	—	Taken out of a cesspool perfectly putrid.
	1	20½	7	3¼	4	5	2½	—	Born alive; drowned in broth.
	1	18½	5½	3	3¾	4¼	2	—	Born alive; died of cardiac apoplexy.
	1	21	7½	3½	4¼	5	3½	—	Born alive; drowned in urine.
	1	21	9	3	4½	5¼	2	—	Born alive; died of apoplexy.
Extra-uterine life of from one to eight days.	1	17	5	—	—	—	1	F.	Born in the ninth month; died next day.
	1	21	8¼	3¼	4½	5¼	3½	M.	Had lived one day (ossification defective).
	1	18	6¾	—	—	—	2	M.	Lived two days.
	1	—	—	—	—	—	1½	M.	Mature and well-nourished; lived three days.
	1	18½	5	—	—	—	2	F.	Lived four days.
	1	16	—	3	4	4½	0	M.	Born in the eighth month; ill-nourished; lived seven days.
	1	19	5½	—	—	—	2¾	M.	Lived eight days.
	1	19	—	—	—	—	1¾	—	Died atrophied after eight days.

MEASUREMENTS—*Continued.*

Age.	No.	Length.	Wgt.	Diameter of Head.			Osseous Nucleus.	Sex.	Remarks.
				Transverse.	Longitud.	Diagonal.			
		Inches.	Lbs.	Inch.	Inch.	Inch.	lines		
Extra-uterine life of from nine to fifteen days.	1	18	—	—	—	—	0¾	M.	A stout child; lived nine days.
	1	20	7	—	—	—	3¼	M.	Lived fourteen days.
	1	17	—	2¾	4	4½	1¾	F.	Lived fifteen days; died syphilitic.
Extra-uterine life of from sixteen days to one month.	1	18	—	—	—	—	1½	M.	Twin brothers; lived nineteen days; suffocated in carbonic oxide gas; weakly; atrophied. The *difference* is extremely interesting.
	1	18	—	—	—	—	2½	M.	
Extra-uterine life of from one to three months.	1	19	—	—	—	—	3	M.	Well-nourished; lived four weeks; suffocated.
	1	22	—	—	—	—	3½	M.	Very stout; six weeks old; drowned.
	1	19½	—	—	—	—	2	F.	Emaciated; six weeks and four days old; poisoned.
	1	20	—	—	—	—	3	M.	Well-nourished (large fontanelle only half-an-inch); lived ten weeks.
	1	20	—	—	—	—	5	F.	Very stout; eleven weeks old.
	1	—	—	—	—	—	3½	F.	Atrophied; ten weeks old.
	1	—	—	—	—	—	5	M.	Three months old; suffocated through carelessness.
	1	—	—	—	—	—	5	F.	Three months old; atrophied.
	1	21	—	—	—	—	4	M.	Two months old; atrophied.
Extra-uterine life of from three to six months.	1	—	—	—	—	—	2	F.	Three months and five days old; syphilitic; atrophied.
	1	—	—	—	—	—	3½	M.	Stout child; six months old.
	1	—	—	—	—	—	4	F.	Four months and two days old; died of sporadic cholera.
Extra-uterine life of from seven months to one year.	1	—	—	—	—	—	3	F.	Nine months old; much emaciated.
	1	—	—	—	—	—	5	F.	Nine months old; died atrophied.
	1	—	—	—	—	—	4	M.	Nine and a-half months old; atrophied and anæmic.
	1	—	—	—	—	—	8	M.	One year old; much emaciated.
	1	—	—	—	—	—	7	F.	One year old; very fine child; struck dead.
	1	—	—	—	—	—	5	M.	One year and four days old; died of syphilis and tuberculosis of the lungs.

MEASUREMENTS—*Continued.*

Age.	No.	Length.	Wgt.	Diameter of Head.			Osseous Nucleus.	Sex.	Remarks.
				Transverse.	Longitud.	Diagonal.			
		Inches.	Lbs.	Inch.	Inch.	Inch.	lines		
Extra-uterine life of from one to two years.	1	—	—	—	—	—	5	F.	One year and a-quarter old; died phthisical.
	1	—	—	—	—	—	7	M.	Rachitic child; one year and a-half old; burned to death.

A summary of these observations gives the following results:—

When born.	No. of Children.	Size of Osseous Nucleus.
In the seventh (solar) month In the eighth „ „	 31	0
In the ninth „	 9	0 — 2 lines.
Mature	52	$\frac{3}{4}$ — 4 lines.

From these observations the following conclusions may be drawn:—

a. When there is as yet no visible trace of the centre of ossification in the inferior femoral epiphysis, then the fœtus can be no more than from thirty-six to thirty-seven weeks old.

b. The commencement of this osseous nucleus, which is at first about the size of a hempseed, or of the head of an ordinary fly (half-a-line), indicates a fœtal age of from thirty-seven to thirty-eight weeks, supposing the child to have been stillborn; in the opposite case the child may have been born alive before this time, without any osseous nucleus, which then becomes developed during its extra-uterine life. In rare instances of unusually retarded development, a fœtus of forty weeks may exhibit only a trifling commencement of this nucleus.

c. When this osseous nucleus possesses a diameter of from three-quarters to three lines, it indicates that the fœtus must have attained a uterine age of forty weeks, always supposing of course that the child has been stillborn. In one instance of unusually retarded development, with defective ossification of the skull, of a girl born perfectly mature, we found *no* osseous nucleus.

d. We may conclude that the child has lived after its birth, when the osseous nucleus measures *more* than three lines. Isolated excep-

tions to this rule in children particularly well developed, will certainly occur but seldom. But the Table just given proves that the reverse of this rule does not hold good, that an osseous nucleus of less than three lines in diameter does not prove that the child has not lived—of course while duly considering this important symptom, we must not neglect the other signs of maturity, and we must also take into consideration the individual differences in each child, particularly as to general nourishment. This symptom has, moreover, the additional value that it is not obliterated by putrefaction, and we are thereby placed in a position to determine the age (possible maturity) of a fœtus long after its death by an inspection of the femur alone.*

11. The *pupillary membrane* is not to be found in a mature child (indeed not from the end of the twenth-eighth or thirtieth week).

12. The testicles are now found in the scrotum (but they may be there at the thirtieth week), the scrotum is no longer of such a dirty brownish-red, or so smooth as before the fortieth week, but is corrugated and of the usual dirty flesh-colour.

13. The *labia majora* cover the vagina and the clitoris, which is no longer prominent.

14. The *umbilical cord* of the mature child is of the average length of the body, that is from eighteen to twenty-one inches, whilst it is in the same proportion shorter in immature children. Yet cords longer than from eighteen to twenty-one inches are very frequent, and, on the other hand, in medico-legal cases entire umbilical cords are not generally seen at all, since this usually occurs only in cases of precipitate birth, where placenta and child are born together, and made away with unseparated.

15. Passing by those well-known functional differences (not observable on the dissecting-table) which distinguish a living mature child from an immature one, I will in conclusion only quote from

* Ollivier relates, *op. cit.*, p. 346, two cases of this nature. In one, the remains of a child were found in a cesspool: they were transformed into adipocire. In the femoral epiphysis, he found an osseous nucleus of a brown colour, fissured, and like a dried juniper-berry. It measured eight millimètres in diameter ($3\frac{3}{4}$ lines). He concluded from this that the child must have lived for some weeks. In another case, the skeleton of a child was found in a chimney. In the femoral epiphysis no osseous nucleus could be discovered, and O. held himself justified in concluding from this, that the child in question had been born before maturity. *Vide* § 97, for further information in regard to the state of the osseous nucleus as a proof of the child having lived.

Günz, whose careful investigations are worthy of the fullest confidence, *the dimensions of the bones* of a mature child, which may be useful in cases of disinterment:—*

Height of the frontal part of the frontal bone	2	inches	3	lines.
Breadth of the same	1	„	10	„
Length of the *pars orbitalis*	1	„		
Breadth of the same	1	„		
Parietal bone from its anterior superior angle to its inferior posterior one	3	„	3	„
Parietal bone from its anterior inferior angle to its superior posterior one	3	„	3	„
Height of the *pars occipitalis* of the *os occipitis*	2	„	—	„
Breadth of the same	1	„	10	„
Height of the squamous portion of the temporal bone from the upper edge of the auditory foramen	1	„	—	„
Height of the malar bone	—	„	6	„
Breadth of the malar bone	1	„	—	„
Height of the nasal bone	—	„	5	„
Breadth of the nasal bone	—	„	3	„
Height of the superior maxillary bone from the *processus alveolaris* to the apex of the *processus nasalis*	1	„	—	„
Length of the superior maxillary bone from the *spinal. nasal. ant.* to the apex of the *proc. zygamat.*	1	„	1	„
Length of each half of the lower jaw	1	„	10	„
Breadth of the lower jaw	—	„	7	„
Length of the seven cervical vertebræ	1	„	3	„
Length of the twelve dorsal vertebræ	3	„	9	„
Length of the five lumbar vertebræ	2	„	3	„
Length of the sacrum and coccyx	2	„	3	„
Length of the collar-bone	1	„	7	„
Length of the shoulder-blade	1	„	6	„
Breadth of the shoulder-blade	1	„	2	„
Length of the humerus	3	„	—	„
Length of the ulna	2	„	10	„
Length of the radius	2	„	8	„
Length of the femur	3	„	6	„
Length of the patella	—	„	9	„
Breadth of the patella	—	„	8	„
Length of the tibia	3	„	2	„
Length of the fibula	3	„	1	„

All the other supposed signs of maturity, for instance, that the mouth in mature children is slightly open, the neck full and firm, the umbilical cord inserted exactly in the middle between the pubis and

* Günz, der Leichnam des Neugeboren. Leipzig, 1827, s. 82.

the ensiform cartilage, we cannot regard as of any value, because of the extremely numerous exceptions.

§ 81. Illustrative Cases.

Case CCCXXXV.—Judicial Query: Has this Child been Mature?

This case was interesting because it occurred under the present penal code, and yet the circumstances of the case required the maturity of the child to be inquired into, though the law makes no such distinction. On the 26th of June, 1851, a new-born child was found in cleaning out a dungpit and was brought to us next day for medico-legal examination. The unmarried woman W. suspected of having given birth to the child, confessed that from the middle of November, 1850, to the 20th of April, 1851, she had frequently had carnal connection with N. N. About the new-year her menstruation first ceased. In the middle of May she suddenly felt herself unwell during the night, she went to the pail of dirty water, and there a number of masses of coagulated blood came out of her sexual parts, in which however there was no compact mass to be felt. This blood she flung into the dungheap. The accused consequently confessed to have given birth, not however to a mature child, but to a five months fœtus. The trifling relaxation of her abdominal coverings, the insignificant scars on her abdomen, but especially the preservation of the hymen, all were in favour of her statement and against the supposition that she had given birth to a mature child. On the other hand, the fœtus placed before us, which was already much putrefied, was nineteen inches in length, weighed five pounds, the diameters of the head were respectively three, three and a-half, and four and a-quarter inches, the breadth across the shoulders was four inches, the transverse diameter of the chest was four inches, the longitudinal one three inches, the breadth across the hips was three inches, the dimensions consequently of a child at the full time and not of a five months fœtus; the cartilages of the nose and ears were already firm to feel, as were also the nails, which reached to the tips of the fingers; the labia majora covered the vaginal entrance. The osseus nucleus of femoral epiphysis was two lines and three-quarters in diameter. The amount of putrefaction present prevented the ascertaining of any other symptoms, but these sufficed to prove with

certainty that the child was no five months fœtus, but a mature and fully-developed child. The appearances found on the mother also, which corresponded exactly with her statements, were not consonant with those of the fœtus; here, therefore, we had a case the reverse of that of a supposititious child, viz., an imputed one! (The other appearances, which were not important, are omitted as irrelevant to the present question.) After the delivery of our opinion the public prosecutor did not feel at liberty to go on with the case, since from the peculiar circumstances of the case there was no objective corpus delicti existent.

Case CCCXXXVI.—Judicial Query: Has this Child been more than Mature?

This case was not a criminal, but a civil one, relative to the dogma of protracted gestation, and affording a scandalous side-piece to the well-known case of Louis, *sur les naissances tardives*. Listen, how far impudence can go! A man, *eighty-two years of age*, formerly a subaltern official, had suffered during the latter years of his life from carcinoma of the bladder and *both testicles*, and finally died, after years of suffering, on the 22nd of August, 18—, in a state of general dropsy. He had lived very much alone, for his married daughter by a former marriage lived abroad (in Russia). From gratitude for her attentive kindness to him, he had married his cook, about half-a-year before his death. In January, *five* months after the death of her husband, the young widow came forward and declared herself to be *six* months pregnant (!!), and on the 1st of June, she gave birth to a female child, the legitimacy of which was, as may be easily supposed, disputed by the married daughter of the deceased, who had now returned to Berlin. The weight of the body produced was seven pounds and a-half, its length twenty inches, the transverse diameter of the head was three inches and a-quarter, the longitudinal four inches, the diagonal five inches, the breadth across the shoulders was five inches, the transverse diameter of the chest was four inches, the longitudinal one three inches, the breadth across the hips was three inches: and in accordance with these figures, which perfectly represent the normal measurements of a fœtus of forty weeks, we, in the first place, gave a negative answer to the question put to us :—Is this an eleven months fœtus? Next in regard to the life and death of the child, only two portions of the

lower lobe of the right lung were of a bright-red colour and floated, all the other criteria were in favour of the child having been dead when born. We assumed that the child while in the birth had made an attempt to breathe, but had subsequently died and been stillborn. This supposition was subsequently confirmed by the accoucheur, who stated, that the child had died apoplectic while being turned, and was dead when born.—(This case, like that of Louis, gives an instructive proof how important it is in all cases of doubtful protracted gestation to ascertain the procreative power of the presumed father at the nominal period of impregnation. *This man*, as above described, was said to have been capable of procreating four weeks before his death!!.)*

* *Vid.* Biological Part, Spec. Div., § 31.

CHAPTER II.

OF THE LIFE OF A CHILD DURING AND AFTER BIRTH.

Statutory Regulations.

General Common Law, § 12, Tit. 1, Part I.—*Civil rights, which would have been inherited by a child yet unborn, if it had been actually born at the time of its conception, are reserved for it conditionally on its being born alive.*

§ 13. *In regard to this, it is to be assumed as proved, that a child has been born alive when unimpeachable witnesses present at the birth have distinctly heard it cry.*

§ 82. Life without Respiration.

The technical language of forensic medicine attaches to many expressions a sense different from that affixed to them in general medical science, and this must be so, since forensic medicine has quite specific (judicial) purposes to serve. Thus it speaks of "Insanity," "Idiocy," "Important injury," and the like, in the sense which the statutes and their makers have assigned to these words. Thus also the word 'Life' when spoken of in connection with a newborn child, is not used in the same general physiological sense in which all organic beings, even plants, and of course also the *fœtus in utero*, may be said to live, but *in foro* the term 'life' must be regarded as perfectly synonymous with the term 'respiration.' Life means respiration; not to have breathed, is not to have lived. Only that life of a newborn child which is dependant on respiration, independent and unconnected with the mother, can be *proved;* every other life is only hypothetical, and the medical jurist can only base his decision upon proof. Of course it cannot be doubted that life without respiration is possible, and does occur in the case of newborn children. Daily experience proves irrefragably that children are born apparently dead, which do not, therefore, breathe,

and which are yet subsequently roused to respiratory life.* It cannot be doubted, that a child possessing only this *pseudo-life* can be killed, passively as well as actively, by omission as well as by commission. If no attempt at resuscitation has been made, the spark of this pseudo-life may have been extinguished thus, and thus alone. But who would presume to suppose, in any given case, the subject of an accusation, that this spark *would* have been kindled to the full flame of life, had this attempt not been omitted? It would probably be easier to prove the murder of this pseudo-living child, supposing it to have been actively ill-treated. It is possible and imaginable that the circumstances of a given case might supply more or less complete proof that a child born, not dead, but only apparently so, had been killed immediately after its birth. In regard to this, Devergie's opinion, which is remarkable as coming from a practical man, is perfectly erroneous, and deserves to be warned against; he says, that the appearance of coagulated blood, about the head or elsewhere, will afford proof of this character in such cases. I have already (Gen. Div., § 11, p. 23, Vol. I.) opposed this erroneous doctrine, and I shall return to the subject by and by (§ 102). But other appearances may exist on the body, which may make it probable, and perhaps prove, that violence has been inflicted upon a body apparently dead. For instance, the throat may be cut, the larynx or cranial bones may be fractured, or there may be a mark of strangulation, &c., and it is not even impossible that traces of reaction may be found upon the injured parts, as happens indeed even in the case of injuries inflicted after death has actually occurred (Spec. Div., § 33, p. 117, Vol. I.). Nevertheless, such cases are extremely rare; their peculiarities must, therefore, be distinctly apprehended, and the matter placed clearly before the Judge, and left for his decision how far proof of a crime is thereby afforded. Still more rare are all those cases which have been fabricated and published, or sought for in older records with a diligence worthy of a better cause, and which are also intended to prove the

* Dr. Maschka has published in the Prager Vierteljahrschrift (1854, III., s. 1, &c.), two cases which, in this respect, may be said to stand alone; the one he relates from documentary evidence, the other was observed by himself. The first was the case of a child which was born secretly and buried, and was roused to life after the lapse of seven hours; the second was a child born apparently dead, in which the sounds of the heart could be faintly heard after the lapse of twenty-three hours.

possibility of life existing without respiration, and rightly so if only meant to refer to life of one second's duration, such as birth of the ovum entire, birth in a bath, &c., cases which are to be looked upon as curiosities, and to be decided on in accordance with the other circumstances attendant on the birth, but which are certainly not fitted to find a general application in the occurrences of daily life, that is, in regard to the immensely larger proportion of usual births. Consequently—there is, as must be confessed, a short *post-partum* life without respiration; but there are no means of recognizing the previous existence of such a life, after it has ceased, therefore *a life of this character is not acknowledged in medico-legal practice*, which only acknowledges the existence of a life dependant on respiration, because that is the only one whose existence can be recognized and *proved*. The correctness of this dogma has been recognized from the earliest times. In Galen's work *De Loc. Aff., libr. VI., Cap. V.*, we find the following passage:—*In confesso est, respirationem a vita et vitam a respiratione separari non posse, adeo ut vivens omnino spiret et spirans omnino vivat.* Short and clear! As in the Latin dialects the word 'expire' (*expirer*) is synonymous with *mori*, so also in the parent tongue was the similar word *exspirare*, whilst we (the Germans, who have no such word as 'expire') use the more figurative expression of 'to exhale the last breath' as equivalent for 'to die.' And, what is not without special bearing on our subject, the identity of respiration with life has even been recognized in the language of lawyers, for in it *exspirare* signifies to die, to disannul, to become extinct, to cease to be; since the Pandects employ the expression, *obligatio exspirat.* We can perceive the value placed by the ancient lawgivers upon the pulmonary function as an evidence of the child's life, both from the pre-Justinian and the old German statutes, according to which the well-known "crying within four walls" (*vox audita intra quatuor parietes domus*) was required as necessary to the proof of life. The quotation from the General Common Law which we have already given (p. 33, Vol. III.) shows that our Prussian statute book also requires the "cry" of the child as proof. On the other hand, it has been objected to our statute book that it actually assumes the possibility of a life without respiration; since its §§ 181 and 182 already quoted, speak of the *death* of the "fœtus in a pregnant woman," and only that which has life can be killed. *Ergo!* But, although, as we have already hinted, it can never be contested that the fœtus in the womb does "live," yet it must be acknowledged that the lawgiver

looks upon the matter from quite another point of view than the physician, particularly the forensic physician. The former has been at all times perfectly in the right to threaten fœticide with punishment. In *his* position, he is bound to protect the earliest commencement of human life as carefully as that already developed into man, and a fœtus is in by far the larger proportion of cases the first commencement of a human being. And if the future existence as man of this *homunculus* may be rendered impossible by a criminal procedure, dare the legislator, in the interest of public safety and morality, ignore this possibility, and leave the crime unpunished? Certainly not. But this position and duty of the legislator have no bearing whatever on those of the (forensic) physician. The latter in such a case has only to explain to the Judge that the death of the fœtus in the womb has or has not occurred. His task is then fulfilled; and should he be asked, as I once was, whether the expelled fœtus had been *alive* in the womb? he may answer the question affirmatively with an unburdened conscience, notwithstanding any further explanation which he might feel himself bound to give, if called upon to define the nature of *this* (fœtal) life. The Judge will not hesitate one instant in regard to the views and intentions of the legislator, notwithstanding the limitations of this definition! ** And with *such* arguments, as those

* To this opinion, it has been judicially objected, that it is a most dangerous view to hold in regard to criminal cases, since it might happen that actual child-murder (on living but not breathing children) might remain unpunished, because the forensic physician holding this opinion has declared that the child was not "alive." To this *judicial* objection, in itself, we have no remarks to make,—except that, according to our many years' experience of criminal life, it has certainly more the air of *à priori* theory than of *à posteriori* practice about it; that is, in other words, that cases such as those supposed are of very rare occurrence in real life;—we have only to repeat, that the forensic physician must steadily maintain his own *medico*-scientific position. And in regard to this, we must still assert there is only one kind of life—that dependant on respiration—that can be *proved*. Moreover, even if it concerned us, we can scarcely believe that actual and evident attempts at child-murder, such as cutting the throat, smashing the skull, &c., of children who can be proved never to have breathed, can be so perfectly ignored and looked upon as non-existent, as seems to be feared in the judicial opinion just given, provided the medical expert does his duty in properly estimating all the circumstances of the individual case, and laying it clearly before the Judge; for, as we have distinctly laid down in all the foregoing paragraphs, the case must be decided as a whole, and not in its separate particulars. Finally, to the fact that our opinions are also held by the highest Medical Board of the country (*Vide* the New Regulations, Vol. I., p. 92),

quoted (p. 34) has it been thought possible to diminish the probative value of the *docimasia pulmonaris?* And is there any one mode of proof in the whole range of forensic medicine that could stand firm against such a mode of confutation? Are the ordinary modes of chemical investigation in cases of arsenical poisoning useless and uncertain, because in many cases—and sooth to say, much more often than in those above referred to—no arsenic can be detected, though it has been undubitably present? Is this too the case with the criteria employed to determine a doubtful case of pregnancy, because, as is well known, they are not applicable in every instance, nor at every period of every pregnancy?

The other objection so often made to the probative value of the *docimasia pulmonaris* is apparently of more value than that just referred to, namely, that though the *docimasia pulmonaris* may prove the respiratory life of the child, yet this is all, and it cannot decide that respiration has not occurred *before* birth, has speedily ceased, and the child has then been born dead.

§ 83. Respiration before Birth.—Vagitus Uterinus.

The doctrine of the *vagitus uterinus* has recently been removed from the domain of the lying-in room, and placed upon the field of scientific observation by Kohlschütter, Mayer, Berard, Jaquemier, Vierordt, Hecker, Schwartz, &c.* I refer, namely, to the discovery of capillary extravasations beneath the pleura, upon the aorta and on the heart, which I have termed *petechial ecchymoses,* to give a proper idea of them to those unacquainted with them, because they are indeed strikingly like petechiæ. These have been already described in speaking of the death of newborn children from suffocation (Spec. Div., § 40, p. 126, Vol. II.), and we have there pointed out how frequently, and by how many observers, this appearance has been noticed. We have also already shown that the origin of this appearance can be

we will not ascribe more than its due value; for however honourable this may be, we willingly confess that in matters of science there is no superior tribunal.

* It is unnecessary to do more here than refer to the oft-quoted case of respiration within the ovum, first published by Hüter in the "Deutschen Klinik" of 19th April, 1856, and subsequently in his pamphlet on the occurrence of air in the human ovum (Marburg, 1856), and his quite peculiar statement in regard to the development of air within the human ovum!!

ascribed to no other cause than to a kind of instinctive and forced respiration within the uterus, when the natural and necessary process of gaseous interchange, afforded by the umbilical cord and placenta, has been disturbed or interrupted. It certainly deserves to be called remarkable that forensic medicine up to the latest date has taken no notice of a physiological doctrine, already adverted to by Bohn one hundred and fifty years ago, and which has occupied much of the attention of physiologists and accoucheurs.—Since, therefore, it can be no longer doubted, that the fœtus may make instinctive attempts to respire, and in certain circumstances necessarily does so, so also it must, *à priori*—even though it had never been heard "to cry in the womb"—be acknowledged that it might make more perfect and successful respiratory movements. Hecker has observed and related a case which is too important to be omitted here.*

"A multipara, aged twenty-eight, on the 20th of May, 1853, without having felt more than the merest indications of commencing labour, lost suddenly in bed a large quantity of *liquor amnii*, and on examination, a long loop of the cord, pulsating normally and distinctly, was found prolapsed beyond the external genitals, and lying along the posterior wall of the pelvis. The *os uteri* was dilated to the size of a halfpenny, and the head of the child was felt to be very moveable and high above the brim of the pelvis. The sounds of the fœtal heart were distinctly heard at the left side of the mother. The attempts to replace the cords with instruments failed, so it was only pushed into the vagina, and kept there by a piece of sponge. One hour subsequently the *os uteri* was completely dilated, but instead of the head of the child, which had evidently receded to the left, the right elbow was now found presenting; the pulsation in the cord remained the same. The version of the child, performed under chloroform, was by no means difficult, but in introducing the hand along the posterior wall of the pelvis, it was found impossible, in endeavouring to keep the loop of the cord to one side, to avoid making some, though but slight, pressure upon it, and the *repeated deep inspirations* made by the child, and *distinctly felt by the hand employed*, showed that this pressure was sufficient to produce an immediate *besoin de respirer*. The head presented no inconsiderable obstacle to the extraction, though the usual traction was powerfully put in force. The child, a girl, seven pounds in weight, and nineteen inches long, was

* *Op. cit.*, p. 127, Vol. II., s. 19.

asphyxiated when born, and could not be resuscitated though artificial respiration was employed very successfully, as proved by the dissection. Hyperæmiæ in the thoracic and abdominal organs, and also subpleural extravasations were not absent in this case. Whether air had actually got into the organs of respiration during the intra-uterine attempts at respiration detailed, could not, of course, be ascertained, because of their artificial inflation."

To this we may annex the analogous observations of Hohl,* in cases of breach presentation, where, with the head still lying in the pelvis, the uterus has contracted and separated the placenta, without the head being thereafter speedily delivered. In two such cases Hohl has seen "the thorax of the child *elevated three or four times after each other*," and the child thereafter born dead. In the lungs of both children there was no trace of air. In one case also of *placenta prævia*, this accoucheur observed respiratory movements. During the version and extraction of the child, which was immediately performed, Hohl observed "even during the version, *lively respiratory movements*," which he regarded as "*actual inspirations*." The child was dead and pale. In all these three cases there were found petechial ecchymoses, namely, "numerous punctate extravasations on the surface of the heart and lungs."

It cannot, therefore, be doubted, that attempts at respiration are made by the intra-uterine fœtus even *before* the membranes are ruptured, and that the liquor amnii may actually be thus inhaled; nor that similar attempts may be made *after* the rupture of the membranes, and that the child may still be born dead (*Vide* p. 128, Vol. II.).† But what connection have these interesting physiolgical experiments with the medico-legal docimasia pulmonaris? The lungs of these children sank under water in every case, except in those few in which the artificial inflation employed in the attempts to resuscitate them had made the lungs capable of floating. All the children were born dead; indeed, in several cases related by Elsässer they were putrid. From another and totally different point of view, also, the fact of intra-uterine respiration, *practically* considered, is not without influence on the solution of the question of the doubtful life of the extra-uterine fœtus—the child after birth. In all these cases in which children which had made intra-uterine attempts to respire have

* *Op. cit.*, p. 128, Vol. II., s. 837.

† *Vide* the experiments made by Schwartz on fœtal rabbits, related at p. 128, Vol. II.

been assisted into the world by accoucheurs, the labour has been, without exception, assisted and more or less laborious, as indeed is apparent from a consideration of the conditions necessary for the production of instinctive respiratory movements. How much greater must the delay in the birth and the other favouring circumstances be supposed to be, which actually must occur and coincide, in order to permit the occurrence of not merely a few short, instinctive, and fruitless respiratory movements, but of actual respiration—the streaming in of atmospheric air into the air-passages! The *liquor amnii* must have escaped, the child, which is not advancing, must have the face presenting, the os uteri must be fully dilated, and the vaginal canal kept forcibly open by the hand or otherwise, in order to favour a true and actual process of respiration. In the few cases of *vagitus uterinus* all these conditions did in fact concur. But do they also concur in those cases with which the medical jurist is concerned, or in those newborn children which are found dead, and which give occasion for the employment of the docimasia pulmonaris? The question must be answered unconditionally in the *negative*. Even if it were not known that concealed births—and only such can give occasion to the application of the test—are anything but protracted, but that they are rather in by far the larger proportion of cases very rapid in their course, or indeed precipitate, because they could not otherwise be concealed,* such must have been for that very reason, *à priori*, supposed to be the case. In cases of rapid labour, however, all the conditions necessary, as well as all the exigencies which might necessitate an attempt to respire *in utero*, are wholly wanting. Considering, therefore, that from the nature of the circumstances, only those newborn children are subjected to the *docimasia pulmonaris* whose birth has been concealed, that concealed births are very rapid, while the *vagitus uterinus* cannot take place in such rapid births, but only where the labour is protracted and requiring the assistance of art, THAT RESPIRATION WHICH IS PROVED BY THE *docimasia pulmonaris* TO HAVE OCCURRED IN THE CASE OF A CHILD SECRETLY BORN, IS TO BE REGARDED AS HAVING TAKEN PLACE NEITHER DURING, NOR BEFORE, BUT AFTER ITS BIRTH, and the child MUST, THEREFORE, BE REGARDED

* Amongst the medico-legal cases of dissection of newborn children which come before us, there constantly occur a most disproportionately large number in which the children have been found still attached to the placenta, and are thus laid before us: a sufficient proof of the frequency of precipitate labour in cases of concealed birth.

AS HAVING BEEN BORN ALIVE. Cases in which the child with its head already born and lying between the thighs of the mother, exposed to the current of atmospheric air, which excites its respiration, can be no longer reckoned among instances of *vagitus uterinus*.*

§ 84. THE DOCIMASIA PULMONARIS.—*a.* VAULTING OF THE CHEST.

That the thorax of a child which has breathed, particularly when it has thereby completely distended and filled its lungs with air and

* The view here adopted, which is the only one at all answerable to the case, is not new, but was laid down forty-seven years ago by our superior Medical Board, the Royal Scientific Commission, in an opinion distinguished by its brevity, without anything of importance being omitted. It is here given entire. It is dated 27th Feb., 1816:—"In accordance with a requisition from the Supreme Court of Judicature, the Ministry of the Interior has requested the Scientific Commission for Medical Affairs to deliver their opinion upon the two following questions: 1st. Whether there are any infallible signs that respiration has taken place in *utero materno*? 2nd. What signs shall for the future be reckoned decisive as to the life of a child subsequent to its extrusion from the maternal genitals? In regard to the first question, the only infallible proof is the declaration by trustworthy persons, that they have distinctly heard the child cry before it was extruded from the maternal genitals, and when the incidents at the birth agree with this. When, for instance, a person has been long in labour, so that, from the entire absence or deficiency in number or power of the pains, after the escape of the *liquor amnii*, the hand of the midwife or accoucheur has to be introduced into the uterus, in a favourable position of the child, the air entering by the interstices made by the introduced hand may be sufficient to produce respiration and crying; this can also more easily happen when the head has already passed the *os uteri*, and the rest of the body has to be delivered by the midwife or accoucheur. Consequently, the conditions necessary for the production of this *vagitus uterinus* are of rare occurrence, and, as is particularly to be borne in mind, *can only happen in a tedious labour, in which manual assistance has been given.* Therefore this phenomenon is *never to be assumed in cases of concealed birth, which happen rapidly and without extraneous aid.* In these cases the child respires first after it has been born, and the Judge can never be placed in any doubt by this phenomenon, in regard to whether a child has lived after birth or no."

"The latter part of our opinion has already sufficiently answered the second question. In every case of rapid and concealed, that is, self-delivery, the life of the child is to be regarded as a life after birth. Should, however, a case occur to a Judge, of an assisted birth in which it was requisite to know whether a *vagitus uterinus* had taken place, and whether a child previously breathing and crying had been dead when extruded from the maternal genitals, this could only be decided by the testimony of witnesses."

blood, must be elevated and dilated, and consequently be more vaulted than previously, is just as certain as that it must, therefore, appear justifiable, in biostatic experiments, to pay attention to the degree of vaulting of the osseous thorax. Mere ocular measurement is, however, not sufficient here, it is indubitable that a mere ocular estimation cannot be termed an observation, since flat, and vaulted, in relation to the thorax of a newborn child, are very ambiguous definitions, and are not sufficient to satisfy even the most experienced individual who may have had hundreds of such bodies before him.* The ancient method (Daniel) of measuring the vaulting with a thread is but little better, since not only may the thread be more or less stretched in applying it, but its texture may also be more or less extensile, and differences may be thus introduced which may be actually greater than those to be measured, which can only amount to fractions of an inch. The only method of measurement which can be depended upon, and which is, therefore, now generally employed, is to take the transverse and longitudinal diameters of the thorax by means of a pair of callipers. Both of these measurements must be greater subsequent to the complete commencement of respiratory life after birth, than they have been in *this same* child shortly *before* its birth. The thesis is incontestably true; but its practical applicability is not thereby increased. For who has measured the diameters of any given child previous to its extrusion from the uterus? We are, therefore, obliged to resort to general comparisons, numerical averages, with which the results obtained in any given case are to be compared. This method may be perfectly sufficient where the individual peculiarities present such unimportant differences that the numerical average of large numbers, say of one hundred observations, differ but little from the results of each single observation. Such is the case for instance in regard to the conformation of the head of mature newborn children, the diameters of which are so constantly almost the same, that the numerical averages obtained are not merely the result of a computation of *maxima* and *minima*, but may be always confidently employed as a means of ascertaining the doubtful maturity of the body of any child which may be brought before us.

* Up to the end of 1853, the number of bodies of illegitimate children either born dead, or that had died shortly after birth, which had been officially inspected by me (for the purpose of filling up the burial certificates), amounted to 1605 in all, and all the data capable of being afforded by inspection were carefully attended to, and among these the conformation of the thorax.

And the question is, whether the diameters of the thorax in newborn children, those born alive as well as those born dead, present any similar or even approximatively similar constant relative proportions, in order to enable us to make an analogous use of the numerical averages obtained from a large number of observations? This question must be met by an *unqualified negative*. The following table comprehends the measurements of the thorax of 238 mature newborn children, 158 of them born alive and 80 dead. The first 102 cases were recent bodies and actual medico-legal cases. I have eliminated all those numerous cases of bodies in an advanced degree of putrefraction as too uncertain, since the distention of the body completely alters the measurements; the other 136 cases have been, like those detailed at p. 19, Vol. III., measured at my desire in our two Royal Maternity Hospitals. It was to be expected, *à priori*, that differences in the manner of applying the measuring instrument, when performed by different observers, that the longer or shorter duration of the respiration, that the different degrees of maturity of the different children, that the varying conditions of the bodies and other circumstances, must exert some influence upon the results of the measurements. It has actually happened in our observations, as well as in those of earlier observers, that real and important differences have arisen, which distinctly point out the uncertainty of the diameters of the thorax as a criterion of the *docimasia pulmonaris*.

DIAMETERS OF THE THORAX IN 238 MATURE NEWBORN CHILDREN—158 OF THEM BORN ALIVE, AND 80 DEAD.

Original Measurements retained as in former Table, p. 19, Vol. III.

No.	Male.	Female.	Diameter of Thorax. Transverse.	Diameter of Thorax. Ant.-posterior.		No.	Male.	Female.	Diameter of Thorax. Transverse.	Diameter of Thorax. Ant.-posterior.	
1	—	1	3¼	3	alive; drowned	41	1	—	3½	3	born dead
2	1	—	3¼	3	„ hemorrhage	42	1	—	3½	3	alive; apoplexy
3	—	1	3¼	3	„ apoplexy	43	—	1	4	3¼	„ „
4	1	—	3¼	2¾	„ ?	44	1	—	4	2¾	„ suffocated
5	—	1	4	2¾	„ drowned	45	1	—	4¼	3½	„ ?
6	1	—	3½	3	born dead	46	—	1	3½	3	„ ?
7	—	1	4	3	„	47	1	—	4	3½	„ ?
8	1	—	3½	3¼	alive; drowned	48	—	1	4	3	„ ?
9	—	1	3¾	2¾	„ apoplexy	49	1	—	4¼	3½	„ ?
10	1	—	4½	2¾	„ „	50	—	1	3¼	3	„ ?
11	—	1	4	3	„ suffocated	51	1	—	4	3	„ ?
12	1	—	4	2¾	„ apoplexy	52	1	—	3½	3	alive
13	1	—	4	3¼	„ „	53	1	—	4¾	3½	born dead; weighed 10 lbs.
14	—	1	4	3¼	born dead						
15	—	1	3¼	2¼	alive?	54	—	1	4¾	4¼	alive
16	—	1	3¾	3½	alive; apoplexy	55	—	1	3¾	3	„
17	1	—	4	3	„ „	56	1	—	3½	3	„
18	—	1	4	3¼	„ „	57	1	—	3½	3	„
19	—	1	3	2¾	„ drowned	58	—	1	4	3¼	„
20	1	—	4½	2½	born dead	59	1	—	4	2¾	„
21	—	1	4½	3¼	„ apoplexy	60	1	—	4¼	3½	„
22	1	—	3¼	2¾	„ ?	61	—	1	3½	3	„
23	—	1	4	3	„ apoplexy	62	1	—	4	3½	„
24	—	1	4	3	„ „	63	—	1	4	3½	„
25	—	1	4	3	„ „	64	1	—	3¾	3½	„
26	1	—	4	2¾	„ „	65	1	—	3½	3¼	„
27	1	—	4	3	„ „	66	1	—	3½	3	„
28	1	—	4¼	4	alive; weighed 10 lbs.	67	—	1	3½	3½	born dead
						68	—	1	3	2¾	„ „
29	—	1	4	3½	born dead	69	—	1	3½	2¾	„ „
30	1	—	4	3½	alive; apoplexy	70	1	—	3½	3	„ „
31	1	—	4	3	„ ?	71	—	1	4	3½	alive; drowned
32	—	1	4¼	3½	„ apoplexy	72	1	—	3½	3	„ putrid
33	1	—	3¼	3	„ ?	73	1	—	3¼	3	„ drowned
34	—	1	4	3	„ ?	74	—	1	3	3½	„ suffocated
35	1	—	3½	3	born dead	75	1	—	3½	3	„ apoplexy
36	1	—	4¾	3½	„ weighed 10 lbs.	76	1	—	3	3¾	„ „
						77	1	—	4	3½	„ pulmonary apoplexy
37	1	—	4	3½	alive; apoplexy						
38	—	1	4	3	„ „	78	—	1	4	3½	„ ?
39	—	1	3¾	3¼	„ ?	79	1	—	3½	3¼	„ cranial injuries
40	—	1	3¾	3	„ apoplexy						

ORIGINAL MEASUREMENTS—*Continued.*

No.	Male.	Female.	Diameter of Thorax. Transverse.	Ant.-Posterior.		No.	Male.	Female.	Diameter of Thorax. Transverse.	Ant.-Posterior.	
80	1	—	3¼	2⅜	alive?	106	—	1	3⅛	3⅜	born alive
81	1	—	3¼	2⅜	born dead	107	—	1	3½	3⅝	„
82	1	—	4	3¼	alive; died atrophic	108	1	—	3	3¾	„
						109	—	1	3½	3⅛	„
83	—	1	4	3¼	alive; fall at birth	110	—	1	3⅜	3	„
84	—	1	4	3	born dead	111	—	1	3½	3½	„
85	1	—	4	3	alive; apoplexy, pulmonary and cerebral	112	—	1	3½	3½	„
						113	—	1	3½	3½	„
						114	—	1	3¼	3½	„
86	—	1	3¾	3¼	alive; cranial injuries	115	1	—	3½	3½	„
						116	1	—	3½	3½	„
87	—	1	4	3½	alive; pulmonary apoplexy	117	1	—	3⅛	3⅜	„
						118	1	—	3½	3⅛	„
88	—	1	3⅛	2⅞	„ ?	119	1	—	3⅜	3⅛	„
89	—	1	4	3¼	alive; cranial injuries	120	1	—	3	3½	„
						121	1	—	3⅛	2⅞	„
90	1	—	4	3½	putrid; born alive	122	1	—	3½	3	„
91	—	1	3¾	3¼	alive; drowned in a cesspool	123	—	1	3½	3⅝	„
						124	1	—	3	3	„
92	1	—	3¼	3	alive; suffocated	125	—	1	3	2⅞	„
93	1	—	3⅜	3¼	„ ?	126	—	1	3⅜	3½	„
94	—	1	3⅜	3¼	„ drowned in a cesspool	127	—	1	3⅛	3	„
						128	1	—	3½	3⅛	„
95	—	1	4	3½	„ suffocated	129	1	—	3½	3⅜	„
96	—	1	3⅜	3¼	„ „	130	1	—	3½	3⅛	„
97	1	—	3⅜	3½	born dead	131	—	1	3⅛	3	„
98	—	1	3¼	3	alive; drowned in a cesspool	132	1	—	3	2⅞	„
						133	1	—	2⅞	3	„
99	1	—	3⅜	3	alive; drowned in pap	134	—	1	3⅛	3⅛	„
						135	1	—	3⅜	3½	„
100	—	1	3¼	3	alive; cardiac apoplexy	136	—	1	3⅛	3	„
						137	—	1	3⅜	3	„
101	—	1	3⅛	3¼	alive; drowned in urine	138	—	1	3⅛	3¼	„
						139	—	1	3⅛	3	„
102	1	—	4	3½	alive; apoplexy	140	1	—	3⅜	3	„
103	—	1	3¾	3¼	born alive *	141	1	—	3⅛	3	„
104	1	—	3⅞	3½	„	142	—	1	3⅛	3⅛	„
105	—	1	3½	3⅜	„	143	1	—	3⅜	3¼	„

* As were all the following, down to No. 188 inclusive; these numbers, inclusive of the four next following children born dead, that is, from No. 103 to 192 inclusive, are the measurements made in the Charité Maternity Hospital.

ORIGINAL MEASUREMENTS—*Continued.*

No.	Male.	Female.	Diameter of Thorax. Transverse.	Diameter of Thorax. Ant.-Posterior.	
144	—	1	3 1/8	3 1/8	born alive
145	—	1	3 1/4	3 1/8	,,
146	1	—	3 1/8	3	,,
147	—	1	2 7/8	3	,,
148	1	—	3	3	,,
149	—	1	3	3	,,
150	1	—	3 1/2	3 1/8	,,
151	—	1	2 7/8	2 7/8	,,
152	—	1	3	3	,,
153	—	1	3 1/2	3	,,
154	1	—	3 1/2	3	,,
155	—	1	3 1/8	2 7/8	,,
156	1	—	3	3	,,
157	1	—	3 1/4	3	,,
158	1	—	3 1/8	3 1/8	,,
159	—	1	3 1/8	2 1/2	,,
160	—	1	2 3/4	2 1/2	,,
161	1	—	3	2 7/8	,,
162	1	—	3 1/8	3	,,
163	—	1	3	3	,,
164	1	—	3 1/8	2 7/8	,,
165	1	—	3	2 3/4	,,
166	1	—	3	3	,,
167	—	1	3 1/8	3 1/8	,,
168	—	1	3	3	,,
169	—	1	3	3	,,
170	—	1	2 3/4	2 3/4	,,
171	1	—	2 3/4	2 5/8	,,
172	1	—	3	2 5/8	,,
173	1	—	3 1/8	3	,,
174	1	—	2 3/4	2 5/8	,,
175	1	—	3	2 3/4	,,
176	1	—	3	2 3/4	,,
177	1	—	2 7/8	2 1/2	,,
178	—	1	2 3/4	2 5/8	,,
179	—	1	2 7/8	2 5/8	,,
180	—	1	3	2 1/2	,,
181	1	—	2 7/8	2 3/8	born alive
182	—	1	2 5/8	2 5/8	,,
183	1	—	3	2 3/4	,,
184	1	—	3	2 3/4	,,
185	1	—	2 7/8	2 3/4	,,
186	1	—	2 7/8	2 3/4	,,
187	1	—	3	2 7/8	,,
188	1	—	3	3	,,
189	—	1	3 1/2	3	born dead
190	1	—	3 1/4	3	,,
191	1	—	3 1/8	2 3/4	,,
192	—	1	3 3/4	2 1/2	,,
193	—	1	3 3/8	3 1/8	born alive *
194	—	1	3 7/8	3 1/2	,,
195	1	—	3 1/8	3 3/8	,,
196	1	—	3 3/8	3 1/8	,,
197	—	1	3 3/4	3 5/8	,,
198	1	—	3 3/8	3 1/8	,,
199	—	1	3 1/8	3 3/8	,,
200	—	1	3 1/2	3 1/2	,,
201	1	—	3 7/8	3 3/8	,,
202	1	—	4	3 3/4	,,
203	1	—	3	3 3/4	,,
204	1	—	3 3/8	3 3/8	,,
205	1	—	3 1/2	3 3/8	,,
206	—	1	3 3/8	3 1/8	,,
207	1	—	3 5/8	3 3/8	,,
208	1	—	3 7/8	3 3/8	,,
209	1	—	3 1/2	3 5/8	,,
210	1	—	3 3/4	3 1/2	,,
211	1	—	3 5/8	3 3/4	,,
212	1	—	3 5/8	3 3/8	,,
213	—	1	3 1/4	3 1/8	,,
214	1	—	3 1/2	3 3/8	,,
215	1	—	3 1/2	3 3/8	,,
216	—	1	3 1/2	3 3/8	,,
217	—	1	3 3/8	3 1/8	,,

* As also all those up to No. 236 inclusive; these and the two following dead-born children, consequently from No. 193 to 238 inclusive, were measured in the Royal University Maternity Hospital.

ORIGINAL MEASUREMENTS—*Continued.*

No.	Male.	Female.	Diameter of Thorax. Transverse.	Diameter of Thorax. Ant.-Posterior.		No.	Male.	Female.	Diameter of Thorax. Transverse.	Diameter of Thorax. Ant.-Posterior.	
218	—	1	3½	3⅜	born alive	229	—	1	3¼	3⅛	born alive
219	—	1	4⅛	3¾	„	230	1	—	3⅜	3¼	„
220	1	—	3¼	3	„	231	—	1	3⅜	3⅜	„
221	1	—	3⅜	3¾	„	232	—	1	3⅜	3½	„
222	1	—	4	3⅝	„	233	—	1	3¼	3¼	„
223	1	—	3⅛	3	„	234	—	1	3⅜	3⅜	„
224	—	1	3⅜	3⅜	„	235	1	—	3⅜	3½	„
225	1	—	3⅛	2⅞	„	236	1	—	3½	3½	„
226	—	1	3½	3¼	„	237	1	—	4⅛	3	born dead
227	1	—	3⅜	3⅛	„	238	1	—	4¼	3	„
228	—	1	3⅜	3⅛	„						

This Table, therefore, supplies the following numerical averages :—

Before Respiration.

The transverse diameter of the thorax averaged 3¾ inches.
The antero-posterior diameter „ „ 3 „
The maximum transverse diameter „ 4⅜ „
The minimum transverse „ „ 3½ „
The maximum antero-posterior diameter „ 3⅛ „
The minimum antero-posterior „ „ 2½ „

After Respiration.

The transverse diameter of the thorax averaged 3½ inches.
The antero-posterior diameter „ „ 3⅛ „
The maximum transverse diameter „ 4⅜ „
The minimum transverse „ „ 2⅝ „
The maximum antero-posterior diameter „ 4¼ „
The minimum antero-posterior „ „ 2¼ „

When from these it is apparent in a most remarkable manner, that the thorax of those children born dead had actually in the average a somewhat longer transverse diameter than that of those born alive, while the antero-posterior diameter of the latter is in the average longer than that of the former, though very inconsiderably so, when we find that the maximum and minimum deviations amount from

one-half to three-quarters of an inch, when, finally, we find in individual but frequent instances that the diameters, both before and after respiration, are perfectly alike, it is evident that the measurements of the chest, that is, that *the vaulting of the thorax is of not the slightest diagnostic value.* Elsässer has arrived at quite the same conclusions from the results of his measurements of the *circumference* of the thorax;* from these I quote only the following convincing particulars, in a series of fifty measurements undertaken on mature living children; the maximum and minimum were 13·5 and 9·9 (Wirtemberg inches)—a very considerable difference, in eight mature stillborn children the maximum circumference of the thorax was 11·3 inches, and the minimum 10·1 inches. E. says, "it is irrefutable that the variations in the circumference of the thorax (and of course in its diameters) are so considerable, that no certain normal mean for a thorax that has breathed, and for one that has not breathed, can be laid down. In most cases the measurements of the thorax are incapable of determining whether the lungs contain air or not. The reason for these variations is, without doubt, to be referred to the congenital differences in the volume of the osseous thorax, partly also to the thickness of the soft parts, particularly of the subcutaneous fat and the thoracic muscles, partly also in the differences in the degree and amount of the dilatation of the thorax by respiration, with which the distention of the lungs also corresponds," &c. Founding upon these recent scientific results, the new Prussian Regulations (p. 86, Vol. I.) have very properly done away with the measuring of the thorax, as perfectly superfluous.

§ 85. Continuation.—*b*. The Position of the Diaphragm.

In considering this criterion as in that just treated of, I for the present abstain from any consideration of the objection so frequently made against the *docimasia pulmonaris*, that the lungs may be distended by artificial inflation, I shall recur to this part of the subject in § 92. This influence being abstracted, it is evident that the fœtal position of the diaphragm must necessarily be higher than after respiration has taken place, and it is justifiable to take this into consideration when the diaphragm is found to be depressed. The position of the diaphragm is most easily ascertained, by making a

* *Op. cit.*, p. 11, Vol. III., s. 5.

longitudinal incision through the skin and superficial cellular tissue, from the chin to the pubis, in the mesial line, dissecting these from the thorax on both sides, next carefully opening the abdominal cavity, introducing the finger of one hand into it, and pressing it up to the highest point of the concavity of the diaphragm, and then with one finger of the other hand reckoning off the intercostal spaces from above downwards till both fingers correspond. The rule is, that the highest point of the concavity of the diaphragm in children born dead, is between the fourth and fifth ribs, and in those born alive, between the fifth and sixth. Deviations from this rule are comparatively rare, therefore *the position of the diaphragm is a good diagnostic sign.* However, respiration of but a very transitory nature, which does not distend the lungs much, nor greatly increase the amount of blood contained in them, may circumscribe the probative value of this symptom, and this is also the case where the diaphragm is forced upwards into the thorax by considerable accumulations of gas in the stomach and intestines, which very readily happens; and in this case the diaphragm, in children which have unquestionably breathed, may occupy a position quite as high as it did previous to respiration. The reverse of this also sometimes happens, where in children born dead the diaphragm occupies a lower position than it ought, from being forced downwards by the distention of the thorax with the gaseous products of putrefaction.

§ 86. Continuation.—*c.* The Liver Test.

I do not think it necessary at present to submit to an extended criticism either the liver test itself, or the experiments of Bernt, Wildberg, Tourtual, &c., which are not supported by any large experience, and which the absence of personal examination does not warrant me in criticising. All these tests have arisen from an unfounded idea of the deficiency of the ordinary *docimasia pulmonaris;* they are all much too complicated to be practically useful, and the Prussian "Regulations," as well as the Austrian, have with great propriety completely ignored them. As to the liver test in particular, it is quite incomprehensible how it should ever be proposed to base a so-called liver test upon the fact, that the liver commences to decrease in weight with the commencement of respiratory life, that consequently the weight of the liver must alter relatively to that of the rest of the body. If we consider on the one hand, that it is not possible for

this alteration in the weight of the liver to be coincident with the first few breaths drawn, but that it must at the most commence gradually with the continuance of respiration, and be only then evident and capable of being proved, when from the long continuance of the respiration there can be no difficulty in satisfactorily proving it by the ordinary *docimasia pulmonaris;* wherefore the liver test is in this respect superfluous. What, however, is superfluous in regard to the docimasia pulmonaris, is actually injurious and objectionable, since, as experience teaches, it only gives occasion to unfounded attacks and doubts on the part of our opponents. On the other hand, however, a test founded upon the weight of the liver ought to be banished from practice as uncertain, because it rests upon a fact, the weight of the liver, which is in itself extremely variable, and therefore incapable of affording any conclusions. When such careful observers as Bernt and Elsässer have found so great variations, the former in one hundred cases having found in the weight of the liver of those children born dead a difference of from 3 oz. 8 drs. (imp.) to 7 oz. 8 drs. (imp.), and in those that had respired perfectly, from 2 oz. 8 drs. (imp.) to 9 oz. 8 drs. (imp.); the latter, in 65 cases of mature children born dead, found a variation in the weight of the liver from 2 oz. 12·8 drs. (imp.) to 9 oz. 2·4 drs. (imp.)!! and of relative weight to the rest of the body from 1 : 44·47 to 1 : 34·77 : the liver test is thereby completely deprived of all confidence. Since the weights in those born alive and those born dead resemble each other in their great variations; and averages and relative weights do not improve the matter, for in every medico-legal case the individual by himself and not collectively is the object of investigation and of proof: therefore we are justified in stating *that the liver test is unworthy of the slightest consideration.*

§ 87. CONTINUATION.—*d.* VOLUME OF THE LUNGS.

It is well known, that after removal of the anterior wall of the chest, fœtal lungs are found not to fill the cavity of the chest, and in particular the left lung is never found even partially covering the heart, whilst after respiration they fill the thorax all the more completely the more fully respiration has been established; and in this case the lower lobes of the left lung cover almost the half of the pericardium. The fœtal lungs are placed quite posteriorly, only occupy about one-third of the concavity of the ribs, and the first glance into the opened

cavity, even when the divided ribs have only been partially separated, displays the anterior margins of the lungs projecting. The strong contrast between the fœtal condition of the lungs, and that after respiration has been fully established, certainly makes the alteration in the volume of the lungs a very good diagnostic sign, particularly for an experienced eye; but the medium condition between these two extremes, that consequent upon a short and imperfect respiration, may yet prove deceptive. In such a case, the lungs are frequently found retracted and deep-seated, and yet the result of the complete *docimasia pulmonaris* indubitably proves that the child has breathed.

§ 88. Continuation.—*c*. Colour of the Lungs.

When we consider that the idea of colour is something quite individual, and how difficult it is to recall by a verbal description the colour impression received, particularly when it is mere shades of colour that are in question, we can understand the differences in the description of the colour of fœtal lungs, and of lungs after respiration has been established, which are to be found in the various authors from the earliest times. Galen's description cannot be regarded as correct, since it was taken from the lungs of animals. But in later times, and up to the most recent, we find the most manifold expressions employed, in order to portray the colours of these two kinds of lungs. I have, therefore, endeavoured to give additional certainty to the descriptions by drawings taken from nature. But even the remarkably correct drawings (Plate VI., Figs. 15-18) are not nearly sufficient; since twenty, thirty, or more drawings of each kind of lung would be required only in some measure to represent the extraordinary variety of shades of colour which occur in nature. Orfila and Billard are perfectly correct when they state, that the colour of the fœtal lungs is "exceedingly various," and it betrays an amount of superficiality not usual in him, when Devergie on the other hand says, that their colour seemed to him always "very much the same." What is true of the fœtal lungs, is true also of those which are no longer fœtal. *In general* it is certainly true to nature to describe the colour of the lungs of a child born dead as reddish-brown liver-colour, becoming of a brighter red at the margins, because there the light acts differently through the thin walls. But it is by no means rare to find upon the lobes several bright red streaks or diffuse patches, whereby they come somewhat to resemble

the lungs of those born alive. Moreover, the reddish-brown liver-colour is sometimes darker, resembling a concentrated water-chocolate, at others it appears much redder, like a mixture of wine lees and chocolate. *In general* it is also true to nature to describe the lungs of those children which have breathed, and which have not the slightest resemblance to the well-known slaty-grey marbled colour of the adult lung, as of a dark bluish-red ground-colour in which numerous bright red circumscribed patches are seen, while just as often the bright cinnabar-red prevails and forms the ground-colour in which the dark bluish-red insular patches are conspicuous. But it is specially, in lungs no longer fœtal, that the greatest variety of hues occur. If any considerable amount of pulmonary hyperæmia have either caused of accompanied the death, we then find the lungs to have a dark brownish-red colour resembling that of the liver, but with bright reddish patches, having even to the accustomed eye of an expert a *most deceptive resemblance* to the fœtal lungs. *The insular marbling described alone affords a certain diagnosis,* for this is *never* found in perfectly fœtal lungs, though it is doubtless only feebly marked in those cases in which the child has been as it were born into fluids (as in a privy), and suffocated at once after one or two respiratory movements. The colour of the lungs is perfectly different in those children born dead, and which have been subsequently artificially inflated, in those putrid, or anæmic after death from hæmorrhage. I have inflated the fœtal lungs a countless number of times, and of course perfectly successfully, by introducing a pipe into the trachea and blowing through it. In every case of perfectly successful inflation of the lungs, without exception, the lungs immediately swell up, become spongy, and assume a bright cinnabar- or bright crab-red colour, which is extended *uniformly* over all the pulmonary tissue, by uniformly, I mean without any insular marblings. The representation, Plate VI., Fig. 15, exhibits just such an inflated fœtal lung as one may find exactly reproduced in nature by experimenting on the first most suitable body of a stillborn child that may come to hand.* The colour of the lung just commencing

* Maschka (Prager Vierteljahrschr. 54 Bd. 1857, s. 35) asserts that when the air is blown in very slowly, without the employment of any force, and in but a small quantity, that then the insular marbling will "not always" be found wanting. Certainly in such a mode of experimenting, portions of the lungs remain of their fœtal colour, and this contrasted with the bright cinnabar-red of the inflated portions, makes the lungs appear mottled. But

to putrefy is not materially altered, only somewhat more livid and dirty-looking; when the lungs are *far advanced* in putrefaction, their colour is constantly the same, blackish, or even quite black, not like ink or charcoal, but like very dark blood that has been long exposed to the air. Such a lung cannot, therefore, be confounded with one in any other condition. In newborn children who have died from hæmorrhage, the lungs appear pale and of a reddish-grey, with a few bluish-black marblings scattered through this pale ground-colour, which is also in itself diagnostically not to be mistaken.* I have endeavoured, without entering into minutiæ, which are only apt to mislead, to describe the colours of the various kinds of lung which are found in newborn children from my own very numerous observations. The result obtained is, that it is consistent with experience, *that every insular marbling of the lung excludes the idea of a fœtal condition,* and entitles us to assume as certain the fact of the child having lived after its birth; but that we are not entitled to draw this conclusion in the absence of this insular marbling from the *ground-colour* of the lungs *alone,* and the other positive and negative means of evidence supplied by the *docimasia pulmonaris* must be resorted to as supplementary proof.

§ 89. Continuation.—*f.* Consistency of the Pulmonary Tissue. —Atelectasis.—Hyperæmia.—Hepatization.

The difference between the consistence of the fœtal lung and the pulmonary parenchyma after respiration has been established, is so great, that it is scarcely possible to confound the two extremes in distinct cases. The one is compact, feels resistent when pressed on by the finger, which readily slips off from the moisture of the organs, and may be actually termed like the liver in consistence, and not merely in colour. The other, the tissue of lungs that have respired, is, on the other hand, crepitant, spongy, and yielding to the pressure of the finger. But here are also intermediate conditions on the one hand, and pathological conditions on the other, which cause the sharply-defined differences of individual cases to disappear. To these, in the first place, belong those common cases in which respiration

* this is not what I have termed, for want of a better expression, "an insular marbling," in which the two colours are as it were washed into one another. On the body the difference is at once readily observed, though it is not so easy to describe it in words.

has not been completely established, and in which, therefore, there are portions of the lungs into which the air has not passed, which have remained fœtal,—a condition which has been named *atelectasis pulmonum* by Legendre and Jörg, junr.* The opinion which would elevate this atelectasis into a peculiar "disease" of the new-born child, which kills it by interfering with its respiration, cannot for one moment be justified. Except where this condition has been, as we shall by-and-by show, confounded with hepatisation, it is nothing else than the original fœtal condition, from which it differs in no anatomical respect, and the case is rather the reverse of the above: the child dies from any given cause, before the whole of the lung has been able to pass from the fœtal to the post-fœtal condition, because the respiration has not had time to become fully established. This so-called atelectasis, which according to this view is only another name for the fœtal condition of the lung, is therefore not a cause, but rather as it were an effect of death. From this also it appears, that it is perfectly absurd to employ this so-called atelectasic condition of the lungs as an objection to the *docimasia pulmonaris*. Are the lungs "atelectasic," and therefore brownish-red, compact, sinking in water, &c.? the child has just *never lived!* Are the lungs only partially atelectasic (fœtal)? then there has been imperfect respiration, which will be readily recognised by carefully carrying out the *docimasia pulmonaris*. For this so-called atelectasis occurs in various degrees and over a varying extent of the lungs. This cannot be better described than has been done by Elsässer in the following words:†—"When the amount of fœtal tissue in the lung is *lobar* in its nature, that is, when it occupies an entire lobe, or a large continuous portion extending throughout the entire thickness, or at least a considerable proportion of the entire thickness of a lobe, then the separation between it and the tissue containing air is generally well defined and easily seen. But usually the fœtal tissue is only *lobular* in its character, that is, there are small patches of fœtal tissue corresponding to one or two lobules scattered in the most manifold manner throughout the rest of the pulmonary substance, sometimes running superficially in lines along the posterior surface" (but also on the anterior surface) "of the lungs, and dipping into their substance to the extent of from half a line to a whole line, at

* Legendre, Krankheiten des kindlichen Alters. A. d. Franz. Berlin, 1847. Ed. Jörg, Fötuslunge im gebornen Kinde. Grimma, 1835.

† *Op. cit.*, s. 22.

others, strewn irregularly throughout the deeper portions of the lungs" (which is most commonly the case). "If these fœtal insular patches are very small but present in large numbers, and if the portion of the tissue containing air contains any considerable amount of fluid secretion, and is of a somewhat dark colour, it is often very difficult, without applying the hydrostatic test to every little portion of tissue, to decide regarding the presence and extent of the fœtal tissue. The sense of feeling is in such a case not sufficient to decide the matter, since by the mixture of very small insular patches of fœtal and air-containing tissue, a mixed sensation is imparted, that is, the part affected is somewhat denser than air-containing lung, and somewhat less dense than fœtal pulmonary tissue; neither does it distinctly crepitate on pressure, nor upon incision."

The pathological conditions, which may alter the condition of the pulmonary tissue, and thus possibly lead to mistakes, are suffocatory hyperæmia and the results of pneumonia. In such a congested condition of the lungs their colour is dark, approaching that of the fœtal lung (p. 51, Vol. III.), and their tissue is also more compact, they (sometimes only one, the hyperæmic one) do not crepitate, but are, nevertheless, more yielding to pressure than fœtal lungs, and *generally* capable of floating. The red and grey hepatisation (splenisation), on the other hand, are characterized by a dirty violet-red colour, by a brittleness of tissue, which is easily torn, and finally, by the presence of fibrinous or albuminous exudation in the pulmonary cells. On incising the hepatised tissue no bloody froth flows out, and it is not easy to press any out, but both bloody serum and also a tough albuminous mucus exude in small specks or drops upon the cut surface. A very little experience will prevent anyone from easily confounding the different appearances in the lungs here described. And, yet in many cases, where there was not merely a fœtal condition of the lung present, the actual result of a pneumonia has been declared to be atelectasis! * Moreover, Legendre himself says, he has sometimes (?) had occasion to observe a fœtal condition of the lung "*combined*" with hepatisation, and Jörg supposes that pulmonary

* The more ancient cases are completely untrustworthy. They date from a time when histology, the doctrine of the phenomena of putrescence, of pneumonia and its results, &c., were yet in their infancy. The longer in any of these cases the children have lived, and it was not merely days, but even weeks (fifteen days in the case reported by Remer), so much the more probable is it that pneumonia has been the cause of death.

inflammation "*usually*" precedes the death of children born with atelectasic lungs. And now I beg of all practical men to read Legendre's prolix description of the differential diagnosis between his atelectasis and hepatisation (*op. cit.* s. 85, &c.), and I am sure they will agree with me that the condition there described has no existence, and that the so-called atelectasis is *a mere word without any real signification*, since it has been employed to designate pulmonary tissue at one time merely in a fœtal condition, and at others in a state of hepatisation or splenisation.

§ 90. Continuation.—*g*. Weight of the Lungs and Heart. —Ploucquet's Test.

There is no more important question in the whole range of forensic medicine, in which, as I shall point out, more errors, useless discussions, and, what is of more importance, more serious practical consequences have followed the customary fashion in our science of one author quoting another without first submitting his quotation to the touchstone of his own personal observation and experience, or, since so few have an opportunity of acquiring the latter, without even submitting it to a literary criticism. W. G. Ploucquet's rightly-valued name, and his *à priori*, just as properly recognised as well-founded supposition, that the lungs of newborn children must increase in absolute weight from the larger amount of blood which would flow into them, finally, his "observation on the bodies of children"—What a sentence to employ!—have, as is well known, occasioned his proposition to compare the absolute weight of the lungs (with and without the heart) with the absolute weight of the whole body, as a means of determining whether the child has lived or not, to be generally received with great welcome. These circumstances have occasioned "Ploucquet's test" to be added as a new criterion to the well-known customary *docimasia pulmonaris*, and that the numerical relations given by Ploucquet from his "observations" of 1 : 70 for children born dead, and 2 : 70 for those born alive, have been generally received as at least approximately correct proportional averages down to the most recent times, till at length those who observed for themselves, objected to them as incorrect. Indeed even Ploucquet's hope "that his lung-test would one day command public attention" was completely fulfilled, and so it is not to be wondered that the famous numerical proportions of 1 : 70 and 2 : 70 have passed from one handbook to another down to the most

recent, and are continually quoted by everybody. I will now proceed to show what connection these have with Ploucquet's *facts*, and with his "observations," and for this purpose I shall go at once to the fountain-head, and give the exact words of the discoverer himself,* in his "*Abhandlung über die gewaltsame Todesarten. Als ein Beitrag zur medicinischen Rechtsgelehrtheit,*" or *Treatise upon the various kinds of violent death. A contribution to Forensic Medicine, second edition, translated from the Latin.* Tübingen, 1788, p. 314. Ploucquet goes on to say: "In this manner (by weighing) is obtained the true relative proportions of the weight of the body to that of those lungs which have respired, and also of those which have not respired. This much at least I have learned *from three observations*" (mark—from THREE observations!), "which I shall proceed to quote, in which the proportions were the following: the body of a newborn male child, which had exhibited evident signs of life a few hours before its birth, but which having died in the birth had certainly never respired, weighed, along with the lungs, 53·040 grs. The dense, collapsed or rather not yet distended lungs weighed by themselves 792 grs., so that the proportion borne by body, including the lungs, to the lungs alone, amounted to almost 67 : 1. In another mature, perfect fœtus, which however had never breathed, the proportion of the weight of the body to that of the lungs was as 70 : 1. (S. Jæger, *Diss. de fœtibus recens natis*, etc. *histor.* §12.) In another fœtus, which though not perfect" (mature) "had yet breathed, the proportion of the weight of the body to that of the lungs was 70 : 2. From this it is evident (!), that the weight of the lungs has been doubled by the amount of blood forced into them by respiration and remaining in them after death, and that it may be possible in doubtful cases to decide from this whether the child has breathed or no. For instance, if we know from experiment that the proportional weight of the lungs to the entire body is as 1 : 70, then the child has certainly never breathed; but should the relative proportion be somewhere about 2 : 70 or even as 1 : 35, then we may be certain (*sic!!*) that the child has breathed."

And has a new "lung-test" been admitted into science, medicine, and practice upon *a basis like this! Three cases*, of which it is certain that one of them was not investigated by Ploucquet himself, while it is very doubtful whether this was not also the case with the

* I quote from the German translation, because I have not the Latin original at hand.

other two! Moreover, Ploucquet immediately drops the first case entirely, and not a word more is said of 1 : 67, the relative proportion discovered. So that of "Ploucquet's observations" all that remain is only *two*, that is *one* child born dead and *one* born alive, which are compared the one with the other, and over and above the comparison is not made between two equals, for the deadborn child was "perfect" (that is, as is well known, mature), but the one born alive was a "not perfect" fœtus!!

It is just as certain that a single case can give no rule, as that it must have been miraculous had the relative proportion deduced from it been accidentally coincident with that obtained by an average. Experience, and the numerous results obtained by more recent and more exact observers, are far from confirming this miracle. In the following Table I have given the weights (in Prussian drachms = 2 drs. imp.) of the heart and of the lungs, with the relative proportion to the weight of the entire body in twenty-six cases of newborn children, born dead, and in sixty-three of those born alive, all taken from my official protocols of the various dissections. I regret that I have not collected the notices of a much larger number from earlier years: nevertheless the conclusions arrived at in this Table are independently confirmed in the most conclusive manner by our own investigations as well as by those of others.

PROPORTION BORNE BY THE WEIGHT OF THE LUNGS TO THAT OF THE WHOLE BODY, IN EIGHTY-NINE CASES OF NEW-BORN CHILDREN.

Children born Dead.

No.	Sex.	Weight in Prussian drachms.	Weight of the Heart.	Weight of the Lungs.	Ratio.	Remarks.
	F	992	9	27	1 : 37	—
	M	768	6	12	1 : 62	putrid
	F	960	8	16	1 : 60	—
	F	896	7	16	1 : 56	—
	M	640	6	14	1 : 46	—
	F	800	7	11	1 : 73	—
	F	480	4	8	1 : 60	putrid
8	M	640	4	12	1 : 53	—
9	M	1280	8	23	1 : 56	—
10	F	480	4	8	1 : 60	8 mo. child
11	F	512	8	18	1 : 29	„
12	M	480	5	10	1 : 48	„
13	M	384	4	8	1 : 48	„

No.	Sex.	Weight in Prussian drachms.	Weight of the Heart.	Weight of the Lungs.	Ratio.	Remarks
14	M	1280	8	23	1 : 56	—
15	F	480	4	7	1 : 68	putrid
16	F	576	7	8	1 : 64	—
17	F	768	5	8	1 : 96	putrid
18	M	1024	7	13	1 : 78	—
19	F	768	9	14	1 : 55	—
20	F	800	5	11	1 : 73	—
21	M	672	4	12	1 : 56	—
22	M	768	4	8	1 : 96	—
23	F	896	6	16	1 : 56	—
24	M	768	6	13	1 : 59	—
25	F	832	9	12	1 : 69	—
26	M	960	8	14	1 : 69	—

WEIGHTS, ETC.—*Continued.*

Children born Alive.

No.	Sex.	Weight in Prussian drachms.	Weight of the Heart.	Weight of the Lungs.	Ratio.	Cause of Death.	No.	Sex.	Weight in Prussian drachms.	Weight of the Heart.	Weight of the Lungs.	Ratio.	Cause of Death.
1	F	844	8	16	1 : 53	drowned	40	M	960	4	16	1 : 60	?
2	M	784	6	10	1 : 78	hemorrhage	41	F	704	6	12	1 : 59	drowned
3	F	868	8	18	1 : 48	apoplexy	42	M	832	5	13	1 : 64	apoplexy
4	F	896	4	14	1 : 64	„	43	M	992	6	10	1 : 99	„
5	F	768	8	12	1 : 64	„	44	M	1056	9	31	1 : 34	pulmonary apoplexy
6	M	1024	8	18	1 : 57	„							
7	F	768	8	24	1 : 32	suffocation	45	F	896	5	12	1 : 75	„
8	M	992	8	16	1 : 62	apoplexy	46	M	1024	6	15	1 : 68	cranial injury
9	M	1024	10	22	1 : 46	„							
10	F	784	6	16	1 : 49	„	47	M	768	6	13	1 : 59	?
11	M	896	8	16	1 : 56	„	48	F	672	4	10	1 : 67	fall at its birth
12	F	1024	6	16	1 : 64	„							
13	F	1024	8	18	1 : 57	„	49	M	896	8	16	1 : 56	pulmonary and cerebral apoplexy
14	M	736	6	13	1 : 56	„							
15	F	864	8	16	1 : 54	„							
16	F	768	6	14	1 : 55	„							
17	F	896	6	16	1 : 56	„	50	F	896	6	12	1 : 75	cranial injury
18	M	832	8	14	1 : 59	„							
19	M	896	7	15	1 : 59	„	51	F	960	6	14	1 : 69	pulmonary apoplexy
20	M	1280	9	20	1 : 64	„							
21	M	896	7	14	1 : 64	„	52	F	832	6	13	1 : 64	cranial injury
22	M	992	8	16	1 : 62	„							
23	F	1120	7	18	1 : 62	„	53	F	832	12	16	1 : 52	drowned in a privy
24	M	832	9	16	1 : 52	„							
25	M	960	8	15	1 : 64	„	54	M	768	5	16	1 : 48	suffocation
26	F	912	8	19	1 : 48	„	55	M	928	5	14	1 : 66	?
27	F	832	6	22	1 : 38	„	56	F	896	7	16	1 : 56	drowned in a privy
28	F	864	6	13	1 : 66	„							
29	M	800	4	15	1 : 53	„	57	F	1088	10	18	1 : 60	suffocation
30	F	896	6	10	1 : 89	„	58	F	896	7	16	1 : 56	„
31	M	896	6	12	1 : 74	suffocation	59	F	736	6	14	1 : 53	drowned in a privy
32	M	864	5	15	1 : 57								
33	F	992	8	16	1 : 62		60	M	896	8	19	1 : 47	drowned in broth
34	M	1120	7	18	1 : 62								
35	F	832	6	16	1 : 52	?	61	F	704	7	11	1 : 64	cardiac apoplexy
36	F	832	8	20	1 : 41								
37	F	864	4	13	1 : 66		62	F	960	8	22	1 : 44	drowned in urine
38	M	800	5	15	1 : 53								
39	F	896	7	10	1 : 89		63	M	1152	9	18	1 : 60	apoplexy *

* The original weights in this Table are retained, the ratio being the important point:—1 Prussian drachm = to 2 drachms impérial.

The following are the results obtained from this Table, excluding in each case those children born putrid or in the eighth month:—

The *ratio of the weight of the lungs* to that of the body was—

In those children born dead - - - - 1 : 61
In those children born alive - - - 1 : 59

The *relative variations* in the weights were quite remarkable. They were—

In those children born dead, *max.* 1 : 37; *min.* 1 : 96
In those children born alive, *max.* 1 : 32; *min.* 1 : 99

As to *absolute weight*—

The lungs of those children born dead weighed on the average 14½ Prussian drachms.

The lungs of those children born dead weighed on the average 15¼ Prussian drachms.

The absolute weight of the lungs *varied*—

In those children born dead, from a *minimum* of 8 Prussian drachms to a *maximum* of 27 Prussian drachms.

In those children born alive, from a *minimum* of 10 Prussian drachms to a *maximum* of 31 Prussian drachms.

The average weight of *the heart* was—

In those born dead - - 7 Prussian drachms.
In those born alive - - 7 „ „

The weight of the heart *varied*—

In those children born dead, from a *minimum* of 4 Prussian drachms to a *maximum* of 9 Prussian drachms.

In those children born alive, from a *minimum* of 4 Prussian drachms to a *maximum* of 12 Prussian drachms.

Such facts as these speak for themselves and require no commentary! Other observers have obtained precisely similar results. Schmitt* found, in respect of Ploucquet's numerical proportion, in the case of twenty-two children born dead, an average (not of 1 : 70, but) of 1 : 52·27 with fluctuations of from 1 : 15·21 in *maximum* to 1 : 83 in *minimum*. Devergie,† who has very judiciously reduced a large proportion of the cases published by Chaussier and Lecieux to their true value, found in the case of thirty-three children born dead an average of 1 : 60 with a *maximum* of 1 : 24 and a *minimum* of 1 : 94: in nineteen cases of children that had

* Neue Versuche und Erfahrungen über die Ploucq. u. hydrostatische Lungenprobe. Wien, 1806.

† *Op. cit.* s. 557.

lived from a few minutes up to twenty-four hours, an average of 1 : 45, and fluctuations of from 1 : 30 in *maximum* to 1 : 132 in *minimum*. In seventy-two cases of children born dead, Elsässer* found the lungs to weigh on an average of 13·06 Pruss. drs., with fluctuations of from 7 Pruss. drs. to 20·5 Pruss. drs., and their average ratio to the weight of the body was 1 : 67·13 with a *maximum* of 1 : 44·63 and a *minimum* of 1 : 96·13. In nine children who died on the first day the average weight of the lungs was 11·18 Pruss. drs., with a *maximum* of 18·13 and a *minimum* of 5·40, and relative proportion was 1 : 55·98, with a *maximum* of 1 : 35·31 and a *minimum* of 1 : 109·82.—In eight cases of children born alive Professor v. Sampson-Himmelsstiern in Dorpat† found that the ratio obtained by the application of Ploucquet's test fluctuated from 1 : $27\frac{17}{27}$ to 1 : $67\frac{46}{37}$.—The following Table brings these results concisely before the reader's eye :—

RATIO OF THE WEIGHT OF THE FŒTAL AND POST-FŒTAL LUNGS TO THAT OF THE BODY.

	Children born Dead.			Children born Alive.		
	Average.	*Maximum.*	*Minimum.*	Average.	*Maximum.*	*Minimum.*
Schmitt - - -	1 : 52·27	1 : 15·21	1 : 83	—	—	—
Devergie - - -	1 : 60	1 : 24	1 : 94	1 : 45	1 : 30	1 : 132
Elsässer - - -	1 : 67·13	1 : 44·63	1 : 96·13	1 : 55·98	1 : 35·31	1 : 109·82
Samson - - -	—	—	—	—	1 : $27\frac{17}{27}$	1 : $67\frac{46}{37}$
Casper - - - -	1 : 61	1 : 37	1 : 96	1 : 59	1 : 32	1 : 99
Mean of totals	1 : 60·10	1 : 30·10	1 : 92·28	1 : 53·32	1 : 31·14	1 : 100·27

By chance, therefore, it has happened that neither Ploucquet's *single* deadborn child, nor his *single* livingborn one have hit the average of ratio! We are now in a position to estimate more correctly from a large series of observations the numerical value of the *à priori* perfectly correct supposition of the increase of weight of the lungs subsequent to the establishment of respiration, and from the summary given above we learn this does not amount to the double of what was their fœtal weight, as Ploucquet assumed to be "certain," but only to the comparatively trifling *plus* expressed by the ratio of

* *Op. cit.* s. 93.

† Beiträge (rigaischer Aerzte) zur Heilkunde. iii. 3. Riga, 1855. s. 228.

1 : 53 compared with that of 1 : 60. Moreover, the very considerable maximum and minimum fluctuations render this *plus* utterly useless practically, and the numerical ratios of 1 : 53 and 1 : 60 would if applied to any given case be just as false and untenable as Ploucquet's ratios of 1 : 70 and 2 : 70, since any given body of a child in respect of the relative weight of its lungs may range anywhere between the maximum and minimum extremes. Nothing, moreover, is more easily explicable than the fluctuations thus ascertained. In producing these the most decided influence is exerted by — the manifold individual peculiarities of a newborn child, which may in one case weigh 6, in another 7 or 8 pounds or even more, the amount of putrefaction present where the body is brought under observation, which produces as it advances a gradual decrease in the weight of the body, while the lungs are only in a very limited degree affected by the process of putrefactive evaporation; and finally, the various kinds of death by which the children have perished of itself exercises a most important influence upon this ratio. In this respect, I will only call to mind the two extremes of suffocatory or pneumonic hyperæmia of the lungs, and their anæmic condition after death from hæmorrhage. In one such case included in the Table the absolute weight of the lungs only amounted to 10 Prussian drs. (20 drs. imp.), while in another not included, but already detailed (§ 22, p. 8, Vol. II.) case of hæmorrhage from cutting the cervical vessels, they weighed only 7 Pruss. drs. (14 drs. imp.). From all that we have just said, it is evident that Ploucquet's lung-test has no scientific basis in fact, but only rests upon the observation of *one single* isolated case of each character, and upon a *supposition* based upon these, that, therefore, it is of no more value than any other *à priori* supposition of any given author; that its practical application can only give rise to errors and false conclusions, *and therefore it ought to be at once and for ever struck out of the list of means employed to prove that respiration has existed.**

§ 91. CONTINUATION.—*h.* THE FLOATING OF THE LUNGS. THE HYDROSTATIC TEST.

In the usual order of succession in which each separate investiga-

* Since the above was written, the new Prussian "Regulations" (*vide* p. 86, Vol. I.) have altogether omitted this lung-test. May this example be speedily followed by the medical institutions of all countries!

tion is made at the medico-legal examination of the body of a child, the well-known hydrostatic test follows next, against which chiefly opposing sceptics have urged their objections. That a lung containing air is specifically lighter than water, and a fœtal one specifically heavier; that, therefore, the former must float in water, and the latter sink, has never been disputed, but it has been denied that the floating of the lungs proves that they have been filled with atmospheric air, or that their sinking proves their fœtal condition. In the first place as to their floating, this may be variously modified. Both of the lungs with the heart and thymus gland still attached may float perfectly, so that when placed in the water they rest upon the surface, and when forcibly depressed they rise immediately to the surface again. In such cases as these of course the lungs when subsequently separated from the heart float quite as perfectly. At other times the lungs with the heart and thymus gland display a tendency to sink, but still continue suspended in the upper layers of the fluid, and only float freely when they have been separated from the heart which weighed them down. Or the lungs and heart may sink either rapidly and at once or slowly and gradually to the bottom of the vessel—these differences depending in each case upon the greater or less completeness with which the pulmonary tissue is permeated by the air. Every variety in this respect giving rise to manifold peculiarities in regard to the buoyancy of the lungs. It may happen that only one lung floats, and this is most commonly the right, because its bronchus is shorter and wider than that of the left lung which sinks; though I have also observed cases in which it was the left lung alone which floated (*vide* Cases CCCLIX., CCCLXI., and CCCXCIX). Or only single lobes may float while all the rest sink. Or finally, where the air has been only very partially admitted into the pulmonary tissue, only a few of those pieces into which the lung has been and must be divided in order fully and accurately to test the degree of its buoyancy* may float. In regard to the mode of instituting this experiment, I have only to remark, besides referring to the statutory procedure ordained in the "Regulations" (p. 92, Vol. I.), that the vessel employed must be at least one foot in depth, eight or ten inches in diameter, and filled with pure cold water. Devergie has recommended the institution of a counterproof with warm

* In regard to the question, Whether any air which may be contained in the lungs may be forced out by pressure? *vide* § 92, p. 54, Vol. III.

water; but the reasons he has adduced for this recommendation are not convincing enough to make it of any value.

The many objections which have been so often urged against the probative value of the hydrostatic test are based upon the following assertions, 1st, that the lungs of a child born dead may contain an amount of air sufficient to make them specifically lighter than water, and thus render them capable of floating: *a*, from artificial inflation of the dead fœtal lungs; *β*, from the spontaneous development of an interstitial or vesicular emphysema in such lungs, and *γ*, from the development of the gaseous products of putrefaction within their parenchyma, by which the lungs may be rendered wholly or partially buoyant in water. 2nd, on the other hand, it has been alleged, that lungs which have evidently breathed may yet sink completely in water. In regard to these objections I shall now, as always, proceed to relate, without prejudice, and with a steady eye to the requirements of actual practice, what have been the constant results obtained during many years of repeated experiment, observation, and experience in a medico-legal practice, which has brought before me instances of the rarest complication.

§ 92.—*a*. Artificial Inflation.

The lungs may be artificially inflated in various ways, and the degree of success, attained depends upon the method selected. It may be performed either before or after the opening of the thoracic and abdominal cavities; in the natural position of the viscera or after these have been removed from the body; with or without instrumental assistance. Nothing is easier—and this may be at any time ascertained—than to inflate fœtal lungs removed from the body, in the most perfect manner throughout all their cells, by blowing through a tube inserted in the trachea (in doing which, however, care must be taken not to rupture a whole mass of cells by too forcible inflation, and then produce a violent, instantaneous, and very visible emphysema!). The lungs immediately dilate and become spongy, instead of their previous brownish-red liver colour they at once (§ 88) assume a most remarkable *bright cinnabar- or crab-red colour, without however any trace of mottling.* In the very many experiments of this character which I have made and still make, I have never observed any other colour, even when the lungs have been inflated *in situ*, but after the thorax had been opened, either by means of a

blowpipe inserted in the trachea, or by the application of the mouth direct to the child's mouth, and I cannot comprehend how there should be so much difference of opinion in regard to the colour of artificially inflated lungs. The representation, Plate VI., Fig. 15, exhibits as true to nature as possible a preparation in which, after the right bronchus was firmly tied, the left lung was inflated by means of a tube inserted in the trachea, so that the colours of the fœtal lung and of a lung artificially inflated are here contrasted. This experiment is much less easily performed when, without opening the thorax, a tube is attempted to be inserted either through the mouth or through the nostrils beneath the epiglottis, for the purpose of inflating the lungs. It generally happens in this case, even to an experienced person, to say nothing of an inexperienced one, that even when the body is placed in a favourable position, the œsophagus and not the trachea is hit upon, and the abdomen is suddenly seen to dilate, a certain proof that not the lungs but the *stomach and intestines* have been inflated; and these are in fact, on subsequently opening the body, found to be *filled with air* to an amount *never witnessed in children born dead*, even after the commencement of putrefaction. It is much more difficult to inflate the lungs without instrumental assistance or any artificial procedure, merely by blowing from mouth to mouth, closing the child's nose, or by blowing through the nose, closing the child's mouth, and it is certainly extremely rare thus to inflate them to any considerable extent. It is also of very little importance as to the result, whether pressure be made on the region of the stomach or not. I cannot blame my own unskilfulness when I confess thus to have inflated the stomach and intestines, and not the lungs, in by far the larger proportion of cases. Elsässer, who has experimented so often, so carefully and in so many various ways, confesses,* "that in forty-five experiments performed on children born dead, without opening their thorax and abdomen, only *one* was attended with complete success, thirty-four with partial success, and ten with none whatever; and it must also," he continues, "be remembered that these experiments were conducted without disturbance and with the greatest care." And yet it cannot be controverted that the latter method alone, which I may call the natural mode of inflation, mouth to mouth or mouth to nose, is the only one that has any relation to medico-legal practice, and not the blowpipe, the opened thorax, or

* *Op. cit.*, s. 80.

the exenterated lungs! Since then even a partial inflation of the lungs with air presupposes in every case anatomical knowledge, practice and dexterity, care and the absence of any disturbing element, we are forced to inquire: In whom such conditions are likely to be found conjoined in those cases which in practice are found as a rule to be the sole objects of this *docimasia pulmonaris*? that is, in the case of children born in secrecy and privacy which are dead when first discovered, and concerning whose life and death all is uncertainty. Certainly not in the mother, who truly—even if she were an expert—could have no interest in seeking to recall to life her child already dead or believed to be so, because in such a case she would not mangle it, hide it in the earth, or fling it from her into the water! Perhaps, however, a physician or a midwife in some individual case has subsequently appeared and attempted to resuscitate the child supposed to be only apparently dead? Such cases are, however, so uncommonly rare, that only five, which I shall presently relate (Cases CCCLXII.—CCCLXVI.), have occurred in my own practice, and I have never observed one single case of this character in all the documentary evidence that has come before me, for the purpose of obtaining a *superarbitrium* during the course of thirty-four years; and even in these extremely rare cases an inquiry into the facts will at once reveal when, by whom, and under what circumstances the lungs have been inflated! Would it not, however, be possible by an investigation of the case to answer the question Whether the air present in the lungs has been introduced by natural respiration or by artificial inflation? I confess that it may be difficult to answer this query, particularly when but a few inspirations have actually been made, and air has *then* been blown in without much effect. In regard to these cases I perfectly agree with Elsässer's* refutation of the numerous diagnostic signs which have been proposed, particularly in recent times by Weber, Tourtual, and Bloxum. Neither the amount of distention of the thorax nor of the lungs, nor their colour, nor still less their weight—always fallacious—nor the amount of crepitation present, nor their buoyancy, can suffice to solve the doubt—which nevertheless, I repeat, in by far the larger proportion of cases, will fortunately never be raised nor require to be so. I cannot, however, declare the determination of the diagnosis to be *impossible*. Since, on the one hand, the true

* *Op. cit.*, s. 78, &c.

cinnabar-red of the inflated lungs already described is very visibly different from their post-fœtal colour, and on the other hand, even in the most successful attempt at inflation the circumscribed dark-mottled patches (§ 88) are always absent. Perfectly pure cases are therefore susceptible of a positive determination; I mean on the one hand, a case in which the respiration has been full and decided, and on the other, one in which the child has been born dead and the lungs subsequently successfully inflated. Further, the inflated fœtal lungs may also be distinguished from those lungs which have respired by the greater amount of blood contained in the latter, that is, incisions into the substance of those lungs which have respired will distinctly give vent to a bloody froth (*Vide* § 96), which is wanting when fœtal lungs, containing consequently but little blood, have been artificially inflated. Since successful inflation truly fills the lungs with air, but attracts to them not one single drop of blood more than what they previously contained, incisions therefore into artificially inflated lungs give rise to the same sound of crepitation as incisions into those lungs which have respired, because in both cases air escapes from the cells of the lung cut across, but no frothy blood escapes.—There is also one other diagnostic mark which sometimes, but not always, because it is dependant on the degree and amount of force applied, distinguishes between respiration and inflation. When the air has been forcibly impelled in a rapid and powerful stream into the lungs, there is formed within them a condition, which, like that accompanying death from drowning, I am forced to term one of *hyperæria;* many of the pulmonary cells are torn across, and large cavities are formed in the parenchyma, which are immoderately filled with air. This condition is most unmistakably observed in the large external air-cells of the lungs, which thereby acquire an uneven surface and a lumpy appearance. This hyperæria, which is an artificial emphysema, is only observed, as has been stated, when the inflation has been forcibly and successfully carried out, specially, therefore, when a blowpipe has been used on exenterated lungs. I must also add, that it is quite incorrect to suppose, as has been done, that the air can be easily *forced by compression* out of lungs artificially inflated, but not out of those which have respired, or at least that it is more easy to do so in the former case than in the latter. Both of these ideas are perfectly erroneous, as I have been taught by innumerable experiments, renewed every session in the course of my lectures. The air contained in the pulmonary cells, in whichever of these modes

it has been introduced, can never again be expelled, even by the employment of the utmost violence, as by standing with the weight of the whole body upon a piece of lung, &c.; and the portion of lung thus forcibly compressed, floats almost as well after its compression as before it. The air, whether it has been blown in or respired, can only be expelled by the complete destruction of the pulmonary cells, best performed by squeezing and lacerating a fragment of lung with the hand, and the piece of lung which previously floated sinks now to the bottom. When, therefore, we observe the following phenomena: a sound of crepitation without any escape of blood-froth on incision, *laceration* of the pulmonary cells with hyperæria, *bright cinnabar-red* colour of the lungs *without any marbling*, and perhaps *air* in the (artificially inflated) stomach and intestines, we may with certainty conclude that the *lungs have been artificially inflated.*

§ 93. Continuation.—β. Emphysema Pulmonum Neonatorum.

I have already shown that the invention, for it is that rather than a discovery, called Ploucquet's lung-test is a complete delusion. And now another similar fable comes before us, in the supposition of a spontaneous, morbid, congenital emphysema of the lungs in newborn children, which has also been employed as an objection against the docimasia pulmonaris, and particularly against the hydrostatic test, since "lungs may float, though they have never respired, when a morbid emphysema has been developed within them." Those observers possessed of the largest experience have all doubted and contended against the truths of this extraordinary emphysema, yet it has not yet disappeared from the works of compiling medical jurists. Years ago we ventured to ask, who had ever *seen* this pathological emphysema in the newborn child?* Certainly neither Chaussier, nor W. Schmitt, nor Henke, nor Meyn, nor Michaelis? Chaussier relates the cases of children born feet first, by turning, whose bodies were examined when quite fresh, and before the first appearance of putrescence, in which of course artificial inflation had not been resorted to, and yet in their lungs he "sometimes" found air in isolated patches, which rendered these fragments buoyant. He supposed that the lungs had been crushed during the turning, the effusion of blood had ensued, and that the putrefaction of this blood

* Gerichtl. Leichenöffn. I., 3 Auf., s. 96.

had occasioned the production of air (emphysema) within the lungs! But what relation, we may ask, do these cases of Chaussier, the subjects of severe and artificial labour, bear to the judicial docimasia pulmonaris, which always presupposes a labour of the directly opposite character? Further, as to Henke and his three "cases,"* a literary offence of the most mischievous character has been repeatedly proved against them. The solitary actual observation which he quotes, is that related by W. Schmitt. But when we read it we find that it relates to a female child which had demonstrably breathed for twenty-four hours after its birth!† At the commencement of his thirty-second experiment, we read word for word as follows: "a mature, strong, and well-nourished girl, born in a state of dormant vitality, was with much exertion roused to life, and twenty-four hours subsequent to its birth, without ever having given vent to a *strong* (sic!) cry, it quietly slipped away." The lungs, "quite fresh and without any trace of putrescence," floated both with and without the heart, "but not perfectly," and "on the middle lobe of the right lung two rows of contiguous air-bubbles were visible, situated in the parenchyma." That, therefore, is Schmitt's case! The child was born on the second of May (in spring weather therefore). How long after death the section was performed, W. Schmitt does not state! But the appearances in the lungs, as described by him, precisely resemble those of *putrefactive* bullæ, and if there were no other "trace of putrefaction" visible on this body, I may remark that it is certainly perfectly correct in the larger proportion of cases to exclude all idea of putrescence in the lungs, where the whole body, and all the other organs which putrefy earlier than the lungs, have not already succumbed to its influence (*vide* § 94), yet exceptional cases do occur, and under certain conditions not yet known, putrescence may occur in the lungs very prematurely; such cases are indubitably extremely rare, but they do occur, as is incontrovertibly proved by the four (10—13) cases already related by me (Gen. Div. § 22, p. 50, vol. I.). Secondly, Henke quotes not an observation, but an *opinion*, of Albertis', and, thirdly, he quotes a supposititious case from the Edinburgh commentaries, which never existed!! The cases of Meyn and Michaelis are more important, and are those on which Mauch has chiefly based his work, "upon Emphysema in the

* Abhandl. a. d. Geb. der ger. Med., Bd. 2. Leipzig, 1823, s. 154.
† Neue Versuche und Erfahrungen, &c. Wien, 1806, s. 41.

lungs of newborn children" (Hamburg, 1841). In Meyn's case, the lungs certainly possessed all the relative qualities of fœtal lungs, except that they floated, and "upon their external surface there were visible small, not elevated, whitish-coloured streaks, which, by pressing and smoothing, were made to lose themselves upon the surface, and which appeared to arise within the cellular tissue connecting the *pleura pulmonum* with the pulmonary substance, and thus appeared to have occasioned a circumscribed loosening of the pleura; these streaks very often appeared of various sizes, like small white punctiform air-bubbles, at the edges of the various pulmonary lobes." Whoever reads this description, and has seen the commencing development of putrescence in the lungs, will have no difficulty in concluding that this case is nothing else than an example of this condition. This explanation "of a commencing putrefaction" has also most correctly been assigned to it by Götze. The body was not dissected till *ten* days after the death of the child (on the 25th of March). During one portion of this time the body had been lying in a warm feather bed, during another, and that the larger portion, the body had lain in water, and for several days it had been exposed to the air in a closed apartment! The weather was "the first very warm weather of spring, with strong sunshine!" Therefore all the conditions most favourable for the production of putrescence were present in this case, and one can only wonder that in the child only the cerebrum and cerebellum were so "soft and pultaceous, that they could no longer be anatomically examined," and that the putrefaction had not already advanced much farther, which the physician on his part ascribed to the coldness and chemical qualities of the marsh water. Finally, the case of Michaelis.* This was that of a girl born secretly and prematurely, which, according to the statement of the unmarried mother (what a source!!), was said to have been born dead, and with the assistance of the mother's hand (!). "The left lung *scarcely* reached to the side of the heart, the right however attained *to its anterior surface;* they were both generally of a bright red colour, and everywhere, but particularly posteriorly, mottled with blue." (I omit the weight, as proving nothing.) "They floated with the heart and thymus gland upon the water, and gave forth a distinct sound of crepitation upon incision, and fine froth" (bloody?) "appeared upon the cut surface. Every portion of them

* Mauch, *op. cit.*, s. 82, &c.

floated in the water. All the organs within the chest," consequently also the lungs, "contained a considerable amount of blood." *This* case, then, is quoted as a proof of "the spontaneous development of a morbid emphysema within the lungs?" No practitioner can have any doubt that *this* child had breathed, even though the mother, after her secret delivery, has asserted the contrary!! If, under circumstances like those of the case now before us, we are to assume without criticism the development of an emphysema of the lungs of a child born dead, we may make a similar supposition in at least the half of all the cases of newborn children which are brought to the medico-legal dissecting-table! It appears almost superfluous also to examine the other case which Mauch* quotes from an anonymous writer, and which he gives as an actual instance of this emphysema. After a labour of four days, which ended with the death of the mother, the child was dismembered, the brain was removed, and "pieces of bone taken from the head." On the body, "the head was found to be twisted by the means employed to assist delivery, the umbilical cord was firmly wound round the neck, one forearm torn off, the bones of the skull broken down to their base, a portion of them torn away, and the whole skull full of sharp points, and edges of bone." We do not require to hear any more in order to arrive at the conviction that this case of a child, so fearfully dismembered by artificial assistance (!), has not the slightest connection with the subject of secret birth, and the hydrostatic test! But how absurd is the whole observation! "The lungs were of a bluish colour" (were marbled therefore?), "and on their edges distinctly displayed air" (but how?), "and had the appearance of lungs which had breathed; this portion also floated when separated from the rest, and gave forth, when compressed beneath the surface of the water, many small air-bubbles and some blood; it also sank after a time in the water, even when it had not been compressed." This statement of itself makes the whole case perfectly untrustworthy. Any lung, or the smallest portion of any lung, which has once floated perfectly, never of itself sinks "after sometime," whatever may have been the source of the air within it. The anonymous author goes on to report that the rest of the lungs sank in the water, "but the heart floated, because the pericardium was quite emphysematous and the heart, even to its small superficial vessels, filled

* *Op. cit.*, s. 34.

with air." All this once more points to putrefaction, which has affected the heart earlier and to a greater extent than the lungs, but nothing is told us as to the general amount of putrefaction present in the body, nothing as to the period after death when the dissection took place, nor the temperature at the time, whether it was + 20° R. = 77° F., or — 15° R. = — 1.°75 F. Nothing as to whether a rib was not broken by the fearful violence to which the child had been subjected, which might have injured the lungs, &c.; in short, this "observation," contributed forty-five years ago, by an unknown and nameless author, must be set aside as completely worthless. According to all that we have just stated, we must lay down as a principle: *that as yet not one single well-observed and incontestable case of emphysema, developing itself spontaneously within the fœtal lungs, is known, and it is therefore not permissible in forensic practice to ascribe the buoyancy of the lungs of newborn children to this cause.**

Postscript to § 93.—Emphysema Pulmonum Neonatorum.

After the foregoing was printed, there was published by Hecker in the *Archiv für pathol. Anat. u. Physiol.*, 1859, xvi., s. 535, &c., the following relative remarkable case, which is far too important to be passed over in silence. The *fresh* body of a child was dissected (in March) only six hours after it had been born dead. The sounds of the heart had not been heard for one hour previous to birth. After the thorax was laid open, however, the lungs were seen to be "greatly distended," in particular the left lung covered the

* In my endeavour to place in this book Forensic Medicine upon the firm basis of the scientific observation of nature, and to oppose as much as possible the much-affected habit of accumulating a mass of mere quotations, I have in the first (German) edition, s. 749, quoted at this place the "Lehrbuch der Gerichtlichen Medicin von Dr. J. H. Schürmayer, Erlangen, 1850," in which the author, s. 305, gives no fewer than twenty-five quotations respecting this emphysema of the lungs of newborn children, from which inexperienced persons might suppose that this emphysema (the existence of which I have denied above) has yet been actually observed by the authors quoted. I have therefore (*loc. cit.*) shown how incorrect and erroneous all these quotations are, which have been exclusively taken from Mauch's work, without any personal examination. Since, however, the author has himself omitted these quotations from the second edition of his work, the remarks made on them in the earlier edition of this book are now suppressed.

pericardium "after a fashion usually observed only subsequent to the complete establishment of respiration; they also had not the red-brown colour of the fœtal lungs, but were much brighter, greyish-red, and felt spongy." Both lungs floated perfectly even to their smallest pieces. Not a trace of putrescence was observable. "Both lungs were not only filled with very much blood, so that incisions into their parenchyma gave vent to frothy blood, but on many parts of their surface, particularly on their edges, an unmistakable *emphysema* existed, precisely the same as has been observed where artificial inflation has been carelessly practised in a case of apparent death, and the child thus actually brought to respire has shortly thereafter died; large bubbles containing air alternated with snow-white patches of the well known appearance. The trachea was examined down to its finest divisions, it was empty, and its mucous membrane was somewhat reddened, the heart contained much dark, coagulated blood." The case as we have just related it is unquestionably a most important one, and as yet perfectly unique. It is quite indubitable that the child must have breathed, and that it must have made *in utero* such powerful inspirations as to have ruptured the air-cells, as in forcible inflation, and produced a *traumatic emphysema*. This intra-uterine respiration is also easily understood when we learn "that the child from the escape of the liquor amnii to the time of its death had *seventeen hours* during which it might respire; during this time also the mother was *very frequently* examined, and often with *half of the hand* in order to determine a contraction of the pelvis, the air was thereby freely and frequently permitted to reach the womb." The usual conditions of the so-called vagitus uterinus were therefore present, and the case was another of those tedious labours requiring the assistance of art to terminate them, and not one more or less rapid, not a secret and lonely birth as all those are, the results of which are brought to the dissecting-table of the medical jurist (*Vide* p. 37, Vol. III., &c.). However strong the proof, therefore, afforded by this case in favour of a premature intra-uterine respiration, which, under certain circumstances, is no longer contested, it is of no value as a proof of a "morbid emphysema," which is supposed to develope itself within the fœtal lungs, and which has been employed as an objection to the hydrostatic test. The knowledge of this remarkable case only requires the opinion just given to be thus modified: *that not one single well-observed and incontestable case of emphysema developing itself spontaneously within the lungs of a*

fœtus, born without artificial assistance, is known, and it is not, therefore, permissible in forensic practice, to ascribe the buoyancy of the lungs of newborn children, brought forth in secrecy and without artificial assistance, to this cause.

§ 94. Continuation.—γ. Putrescence of the Lungs.

The last objection raised against the hydrostatic test is, that even fœtal lungs may become more or less buoyant, or even capable of floating perfectly, by the development within them of the gaseous products of putrescence. From this point of view also, its opponents, therefore, say that the hydrostatic lung-test is uncertain, and of no probative value. It certainly will never occur to any practical man to deny this fact in itself, since it can be immediately proved by experiment on any suitable lung. But a careful medical jurist will not permit himself to be deceived by this, since the differential diagnosis between the air that has entered the lungs by the respiratory process and that produced by the putrefactive process is really not difficult to make. In the first place, namely, according to my own observations, it is incontestably true that the lungs belong to those organs which are latest of putrefying (p. 49, Vol. I.). So it is in by far the larger proportion of cases, and those in which there is a very early occurrence of putrescence in the lungs, even previous to the general putrefraction of the body, constitute the rarest exceptions (p. 50, Vol. I.). From this cause alone it may be decided with certainty, that where lungs float when taken out of a body *which is still fresh*, or which at the most displays only the earliest traces of commencing putrefaction, this floating certainly does not arise from the presence of the gaseous products of putrefaction, and the other appearances on dissection which assist in forming the *docimasia pulmonaris* will complete the proof. To this must be added, that the diagnosis may be formed with care even from the external appearance of the lungs.

I have already (§ 22, Gen. Div., p. 49, Vol. I.) fully described the appearance of lungs which are commencing to putrefy, and I beg to refer to this description. I have not observed any difference whether the lungs were those of a child born dead, or of one that had respired. We always find gaseous bullæ beneath the pleura, the size of millet-seeds, pearls, or beans, which are either all much of the same size, or present considerable variety in this respect; they are

either isolated or in groups, like a string of pearls, and are very visible on the surface of the lungs, most commonly at their base, or in the interstices of the lobes, and continue visible even after the internal cells of the parenchyma are filled with the gaseous products of decomposition, a condition which cannot be recognised with the eye. From this condition of the exterior, however, the presence of the gaseous products of decomposition is at once recognised, and it serves as a guide to the value of the hydrostatic test in the case in question, even when the colour of the lungs is not altered in the least, and continues to be fœtal or post-fœtal as the case may be. Powerful and successful artificial inflation may certainly give rise to bullæ perfectly similar to those described as the result of putrescence; but in medico-legal cases there cannot in general be any question of artificial inflation (§ 92). When putrefaction has advanced further, when the serous covering of the lungs has lost its lustre, when they have become dark-grey, greyish-black, pultaceous and stinking, it is completely impossible any longer to mistake the cause of their buoyancy. I am very far from supposing that the *floating* of the lungs of itself can prove anything when both they and the whole body have already passed into such an advanced stage of putrescence, especially since I know no way of distinguishing between fœtal lungs, and those that have respired, when both have become buoyant from decomposition. But even in these bodies the hydrostatic test may yet be of practical value, namely, when it affords a *negative* evidence, when, for instance, the lungs of the greyish-green body of a child *sink* in the water, as I have frequently seen them do (*Vide* Cases CCCXXXVII.—CCCXLII.). This negative proof has been often of the greatest use to me, in enabling me, in spite of the most advanced state of general putrefaction, still to decide with greater or less probability that the child had not lived. I shall by and by relate two cases (CCCXL. and CCCXLI.) of highly-decomposed newborn children, in which the putrefied heart and liver floated, while the well-preserved lungs sank.

Maschka's very numerous experiments * have decided a question apt to arise in regard to the floating of lungs from the development of the gaseous products of decomposition within them, whether namely, lungs which have once floated from this cause, subsequently become incapable of floating and sink? and from my own experi-

* Prager Vierteljahrschrift, 1857, I. 69, &c.

ments on the putrefied lungs both of children born alive and of those born dead, I can confirm his statements. When all the gaseous bullæ beneath the pleura have been successfully punctured, then the lungs, which had previously floated from the buoyancy of the aërial contents of these bullæ, sink in the water. But it is not always possible to destroy these bullæ, especially when they are in great numbers and of small size. If however this puncturing has been successfully performed, and if the lung, previously buoyant, now sinks, then we have thereby gained an important evidence in favour of the child not having respired, which may be raised to perfect certainty by the results of the rest of the examination. These experiments have, therefore, a practical significance for the medical jurist. On the other hand, a scientific, but no practical value, belongs to the observations of Maschka and myself, that lungs buoyant from putrescence, when observed for some time, several weeks, under the utmost variety of temperature of the air and water, at last sink. They are then found to have crumbled to detritus, and lie at the bottom of the vessel as a pultaceous mass of dirty-black shreds. In the course of a more protracted period, the lungs within the body of a child suffer the same destruction from the progress of putrefaction, with the exception of falling into separate shreds, which I at least have never yet observed; it is, however, evident that long ere that time they have ceased to afford any evidence in regard to the fact of respiration.

§ 95. Continuation.—Post-respiratory sinking of the Lungs.

We have still to examine the directly opposite objection to the hydrostatic test, that lungs which have respired may nevertheless sink, and that consequently from this point of view also the hydrostatic test is a "dubious and uncertain" experiment. The conditions which we have now to consider are: the so-called atelectasis, suffocatory hyperæmia, and hepatisation (splenisation) of the lungs. These conditions have been already considered at length in § 89 (p. 53, Vol. III.). That each of them may occasion the lungs to sink, is just as indubitable as that this may be also caused in other cases by pathological pseudo-formations, particularly tubercle.

Some years ago I opened the body of a child, which was well known to have lived for eight days, and had died in the Charité Hospital. The lungs were entirely of the brownish-red colour and

compact consistence of fœtal lungs, and sank completely even to their smallest particles. Incisions revealed the red hepatisation which was suspected, and the existence of the pneumonia, which was diagnosed, was subsequently confirmed by an inspection of the Hospital sick reports. A precisely similar example was presented by a two days' old child, which was born with pemphigus and died from unilateral pneumonia. The left lung, of a mingled bluish and rosy-red colour, floated just as completely as the right one, in a state of red hepatisation, sank. One example of the sinking of one lung from suffocatory hyperæmia, while the other floated, has been already detailed (Case CCXLIII.), and similar cases will be found related among the illustrative cases which follow (*Vide* CCCLIII.-CCCLXI.). The following case was as instructive as it is rare. A female eight-months' child, born in Hospital of a syphilitic mother, was brought before us for dissection. The child was very insufficiently nourished, it weighed only four pounds, and had upon its feet an eruption similar to pemphigus. The lungs were quite variegated in appearance, namely blue and red, with brighter mottlings, and thickly strewn with yellow glimmering tubercular deposits, some of which at the apex of the left lung were of the size of a hazel-nut. Corresponding with these appearances, the lungs were partly crepitant, and partly (over the tubercular deposits) cartilaginous to the feel. United to the heart they sank rapidly in the water. Nevertheless we were convinced from the strongly marked mottling of the lungs, that the child must have lived (*Vide* p. 53, Vol. III.). Separated from the heart, the left lung sank completely, whilst the right floated just beneath the surface of the water, and of its lobes the middle and lower one floated perfectly. When finally divided into many small pieces, ten pieces of the right lung and four of the left one were found to float perfectly. The supposition that the child had lived after its birth was completely confirmed by subsequent inquiries at the Hospital. It had lived for about a quarter of an hour.

But what do all these cases prove? Certainly not the uncertainty of the *docimasia pulmonaris* as a whole? Does not even the most zealous champion of the modern contemners of this test, Henke, say that conditions such as we have here related are extremely rare (*that* they are not, as may be easily seen from my own observations alone), and that they cannot be mistaken. And indeed, where such conditions of the lungs as those we have just referred to have been

mistaken by a medical jurist who has suffered himself to conclude, *solely* because both the lungs sank, that there had been no respiration, there we would indeed have to lament the insufficiency of the "expert," but not that of science! There is, therefore, no foundation for the fancied uncertainty of the hydrostatic test in itself *in general*, which has been deduced from the pulmonary conditions just referred to.

§ 96. CONTINUATION.—*i.* INCISIONS INTO THE PULMONARY SUBSTANCE.

It is an error of frequent occurrence, to speak of the fœtal lungs as containing no blood, since their nutrient vessels must necessarily supply them with blood. But it is equally certain that, with the commencement of respiration, that is, with the opening of the sluices of the lesser circulation, a new and greater amount of blood suddenly begins to stream into the lungs, which bears not the slightest relation to the amount of blood previously existent in them. Alas! we possess as yet no means of more accurately determining this fact in a scientific manner, since we have already shown, when investigating Ploucquet's test, that it does not bear a ratio of 2 : 1, that is, that the lungs do not become as heavy again as they were in their fœtal condition. The fact itself is not the less constant. This greater amount of blood contained must make itself perceptibly evident, when incisions are made into the pulmonary parenchyma and the blood-vessels are divided, and the outflowing blood, particularly when gentle pressure is employed, must necessarily mingle with the inspired air escaping from the cut pulmonary cells, which causes the well-known *sound of crepitation*, and well-forth, as a *bloody froth*, generally of a dark colour. It is easy to point out the diagnostic value of this appearance in relation to the question of respiration. Even on incising fœtal lungs blood does and must escape, often mingled with mucus or liquor amnii. But it requires a comparatively strong pressure, amounting occasionally to an actual compression of the cut portions, to make the blood well forth, while, on incising lungs which have respired very frequently when the organs are tolerably full of blood, or actually hyperæmic, the bloody froth runs forth of itself, or appears upon the slightest pressure. Further, the frothy condition of the blood, as well as the sound of crepitation, are wholly awanting in the case of fœtal lungs, just because the cause of both of these phe-

nomena, the inspired air, is wanting in them. Finally, for the same reasons, on making pressure upon the incised portions of the post-fœtal lungs beneath the surface of the water, the expressed air is seen to ascend in the form of *small air-bubbles*, but nothing of this kind is or can be seen in the case of fœtal lungs. The differences between the two kinds of lungs in this respect are so important and so evident, that errors in respect to these experiments and their signification are, with a little attention, impossible. It is true—once more to return to the objections against the practical utility of this test—that artificially inflated lungs, as well as those containing the gaseous products of putrefaction, likewise give forth a sound of crepitation when their cut portions are compressed, from which also air-bubbles ascend when this pressure is applied under water; but of course neither of these conditions can in the slightest degree increase the amount of blood contained in the lungs, and, therefore, actual bloody froth will never be seen under either of these circumstances. Further, it must be mentioned that this appearance, in spite of the actual occurrence of respiration, may fail or cease to be observable, when the lungs have commenced to putrefy and have, along with all the rest of the body, become anæmic from that cause; or when the blood has escaped from lungs that have breathed by a hæmorrhage that has been fatal to the child. In both of these cases, however, the other diagnostic phenomena are so apparent that a proper consideration of them will prevent even those less experienced from being deceived. For these reasons *the flow of bloody froth from the cut surfaces of the lungs, upon the application of slight pressure, must be declared to be an appearance of the highest value.*

§ 97. The Centre of Ossification in the Inferior Femoral Epiphysis.

The new Prussian Regulations (p. 86, Vol. I.), quite correctly, do not require the medical jurist, in addition to the phenomena we have hitherto considered in regard to the *docimasia pulmonaris*, also to examine the state of the fœtal blood-vessels and circulatory openings, or to inspect the contents of the urinary bladder or rectum —both of which organs must, however, be investigated for other reasons, at this as well as at every other period of life—as appearances to be considered in delivering his opinion in regard to the question

of respiratory life. Nevertheless this is constantly done by all the physicians of the realm, from the force of ancient custom, as so many other things in medico-legal practice are handed down and conserved by tradition alone. The Regulations also rightly enough omit any mention of an object of examination which is the result of recent discovery, and which we shall presently detail, but they do prescribe the necessity of ascertaining the existence of the osseous nucleus in the inferior femoral epiphysis. This appearance has been already treated of in detail in § 80 (p. 23, Vol. III.), where its value as a proof of maturity has been estimated. As the result of the continuous and vigorous advancement of the process of ossification, this osseous nucleus also, however, possesses a relative value in deciding the doubtful question of the child's life after birth. And I beg to repeat the rule above laid down: *that an osseous nucleus of more than three lines (Rhenish) in diameter permits the deduction that the child has lived after its birth.* But few exceptions to this rule are likely to occur. Any such child born dead with an osseous nucleus of more than three lines in diameter, would, however, be at once recognised as a child born dead, by means of the *docimasia pulmonaris*, to which of course the greater probative power must always be granted. I have, however, already pointed out (§ 80, p. 28, Vol. III.), that the reverse of this rule does not hold good, that is, that an osseous nucleus less than three lines in diameter does not prove that the child has not lived.

§ 98. Uric Acid Deposit in the Ducts of Bellini.

Cless was the first in Germany to point out the occurrence of uric acid salts in the kidneys of newborn and young children, which are found as a deposit in the renal canals, which has received the somewhat improper name of the uric acid infarctus.* When kidneys which contain this deposit are laid open, as they usually are at dissection, vertically from the convexity to the pelvis, and two halves thus separated, this deposit is at once distinctly perceived by the unaided eye in the form of bright yellowish-red points or stripes, which represent the ducts of the pyramids (*Vide* the representation, Plate VII., Figs. 21 and 22). Any confounding of these with fat globules is at once rendered impossible by the use of a simple magnifying-glass,

* Med. Correspond. Blatt des Wurtemb. ärztl. Vereins, 1841, II. s. 114.

or a microscope, although at the first glance of a somewhat short-sighted eye these deposits certainly somewhat resemble fatty particles. Many more recent observations made by Engel, Schlossberger, Martin, Virchow, Hoogeweg, Hodann, and myself have placed the existence of this appearance beyond a doubt. Since Schlossberger, however, made the statement, "that this injection of the renal ducts with urates is never found in the bodies of children which have not breathed, that the discovery of this deposit, therefore, permits the conclusion being drawn with sufficient certainty that the child has lived (though the reverse does not hold good*)," the question has acquired a medico-legal importance, and this all the more that men are generally only too prone to distrust the results of the ordinary *docimasia pulmonaris*. Virchow† and Elsässer ‡ adopt Schlossberger's views, while Martin § and Weber ‖ do not regard these views as correct, and Hoogeweg ¶ and Hodann ** only accord to this appearance the value of proof adjuvant to the general docimasia pulmonaris. In a medico-legal point of view it appears somewhat critical, that hitherto the researches made upon the bodies of children born dead or who have died soon after their birth (for such cases alone can possess any medico-legal interest), have not sufficed to settle the question whether the deposit of urates is a normal and physiological, or an anormal and pathological appearance? Engel,†† Virchow, Martin, and Hodann, &c., regard it as physiological and produced by the great alterations produced in the vegetative life of the child after its extrusion from the uterus; Meckel‡‡ and v. Faber §§ regard it as pathological, while Schlossberger ‖‖ leaves the matter undecided. It is at once evident from these doubts how

* Archiv für Physiol. Heilkunde. 1850. ix. s. 547.

† Verhandlungen der Gesellschaft für Geburtshülfe in Berlin, 1847, ii., 170.

‡ *Op. cit.*, s. 77.

§ Jenaische Annalen für Phys. u. Med. 1850, s. 126.

‖ Beitr. z. pathol. Anat. der Neugebornen, 1854.

¶ Casper's Vierteljahrschrift, vii. 1 s., 33, &c.

** Jahresbericht der Schlesichen Gesellschaft für vaterl. Kultur fur das Jahr., 1854. Breslau (1856) 4. s. 139, &c. (This also appeared as a separate pamphlet at Breslau in 1856.) It is a monograph which perfectly exhausts the subject, and contains a plate.

†† Œsterr. medic. Wochenschr. 1842.

‡‡ Annalen des Charité-Krankenhauses, iv. 2. Berlin, 1853.

§§ Anleitung zur gerichtl. Unters. neugeb. Kinder. Stuttg. 1855, s. 145.

‖‖ *Op. cit.*, s. 545.

often this appearance must be absent from the bodies of *newborn* children; and this fact has been amply confirmed by my own very numerous dissections for judicial purposes of the bodies of children actually newly-born (*Vide* also the list of cases given by Schlossberger, &c.) It may therefore be concluded with certainty, *that the absence of this deposit of urates is in itself of no value as proof of the condition* (*living or dead*) *of the child at its birth.* But even the *presence* of this deposit *can now no longer be used as proof that the child was not dead at its birth, therefore, of its live-birth,* since to the earlier cases published by Hoogeweg, Martin, and Virchow, &c., of children which had died previous to or in the birth, and in whom this deposit was found, more and more well-observed cases of a similar character are continually being added. In a few rare cases, where the children had died during the birth, Weber* found sand in the ducts of the pyramids. Lehmann† also saw with the unaided eye a great quantity of sand in the bladder of a child born dead, and he found on the microscopic examination of the kidneys, "almost as often in those born dead as in those born alive," small, irregular, dark-coloured, sparkling granules strewn in and between the urinary ducts, or crystallized in larger granular masses. Schwartz‡ has published two very accurately described cases, in which both children (delivered with the forceps) were born with feeble pulsation of the heart, but could not be brought to respire. In the first child there was "uric acid sand in the pelves of the kidneys and in the ducts of the papillæ;" in the second child "the straight urinary ducts of both the healthy kidneys were filled with a reddish deposit of uric acid." B. Schulze's case § is as follows:— In a child born in the Berlin University Maternity Hospital, after a labour lasting three days, in which no trace of cardiac contraction or of respiratory movement could be perceived, the right kidney displayed in several of its pyramids a distinct deposit of uric acid. A precisely similar case of a dead-born child happened in the same institution in the year 1858, in which the deposit was indeed unusually visible. I have to thank the kindness of the physicians to the Maternity for enabling me personally to observe the two preparations last mentioned. In this state of matters the

* F. Weber, Beiträge zur pathol. Anat. Neugeborner. Kiel, 1854.

† Neederlandsche Weekblatt. 1853, März.

‡ Die vorzeitigen Athembewegungen. Leipzig, 1857, s. 57, &c.

§ Deutsche Klinik, 1858, No. 41.

appearance of a uric acid deposit in the kidneys of new-born children *can no longer be acknowledged to be of any diagnostic value in relation to the question of respiratory life.* The whole subject is, therefore of no value in forensic medicine, however important it may be to physiologists and pathologists—to whose further inquiry and discovery the subject must now be left.

§ 99. The Remains of the Umbilical Cord.—The Ring of Demarcation.—Mummification.—The separation of the Cord.

In § 77 (p. 9, Vol. III.) we have already spoken of the umbilical cord in regard to its employment in the diagnosis of the age of a child. As to its signification as a proof of life after birth, attention must in the first place be directed to the fact, that in perfectly fresh bodies a bright red ring, about one line in breadth, is seen surrounding the root (insertion) of the umbilical cord, which must not be looked upon as the commencement of the throwing off of the cord, and consequently as a proof of living reaction. For this areola is formed within the uterus, and is, therefore, observed even in children which have been born dead. It is impossible, however, to observe this appearance in such bodies as have the abdomen, as so often happens in medico-legal cases, already green from putrescence, or even blackish-green, and with the cuticle peeled off. In these, alas! too frequent cases, another much more important appearance also ceases to be visible, an appearance which must not be confounded with that just mentioned, and which affords *irrefragable proof of the extra-uterine life of the child,* the appearance, namely, of the commencement of *the separation of the umbilical cord.* This also is a bright red ring about two lines broad surrounding the insertion of the cord, but with thickening, inflammatory swelling of the portion of skin affected, and slight purulent secretion from the umbilical ring itself. This appearance may be visible on the third day of extra-uterine life. The suppuration may however continue, as every physician knows from experience, in increased quantity for eight to fourteen days, or even longer, after the complete separation of the umbilical cord.* Somewhat earlier, towards the end of the second

* H. v. Meckel has described with great minuteness the physio-pathological nature of the process, in his paper on "die Eiterung beim Abfallen des Nabelstrangs," in the Annalen des Charité-Krankenhauses zu Berlin, 1853, iv. 2. s. 218, &c.

day of extra-uterine life, the *umbilical cord commences to mummify* from the point of division towards its insertion, which it reaches on the fourth or fifth day. Some (Billard, Hervieux, &c.) have interpreted the drying up of the fluids of the cord as an act of vitality, and consequently, as a proof of the respiratory life of the child. Nothing is, however, more erroneous, as has already been proved by the researches of Günz, Elsässer, and H. v. Meckel, as well as by my own very numerous experiments. They experimented, as I also continually do, in comparing pieces of umbilical cord mummified and separated by the natural process, procured from the Maternity Hospital, with artficially mummified pieces of umbilical cord cut fresh and juicy from the bodies of children born dead. The latter were always divided into two portions, and one part exposed to the sun in the open air, while the other was dried in a perfectly dry and shady vaulted cellar. To produce complete dryness one-half longer time was required in the shade than in the sun, from three to six days in the sun, and from six to twelve days in the shade. In three pieces of umbilical cord, one naturally mummified and separated from the living child, the other two, artificially dried after death, one in the sun and the other in the shade, not the slightest difference can be perceived even with a magnifying-glass. In all the three we have the same ribbon-like surface, the same tendency to twist round the long axis, the same well-known greyish-black colour with fine red vessels faintly glimmering through, the same parchment-like consistence, and finally, the same manner of softening in water either cold or hot. After the lapse of about an hour the leathery cords commence to soften, they swell up somewhat, are slightly flexible when bent or manipulated, and are as it were shot with greyish-white. But no amount of steeping in water can ever restore the pristine character of the cord in all its freshness, and it remains leathery and of a washed-out-like grey appearance. These experiments are specially valuable in regard to chance cases of children thrown into the water *after death*, and with their *navel strings already mummified*. Because an umbilical cord still fresh, or one no longer fresh, but in a state of moist putrefraction, when it gets into the water does not mummify but colliquesces, so that solely from the appearance of mummification of the umbilical cord in the body of a child taken out of the water, we are entitled to conclude, that the child must have been already dead, and that for several days at least before it was thrown into the water. In like manner, the

navel-string of a dead fœtus does not mummify in the liquor amnii, so that a putrid fœtus is never found to be born with a mummified umbilical cord. Therefore, this appearance permits another very important practical conclusion to be drawn. When namely, the examination of the body has shown that a child, with the remains of a mummified navel-string attached, has been born dead, and when, as so often happens, the probable date of the birth of this child is inquired by the Judge, then we may declare with certainty, from this appearance alone, and without any estimation of the progress made by putrefraction, that this deadborn child must have lain exposed to the air for several days before it was discovered. But to return to the main question, from the experiments just detailed, it must be considered as incontestably proved, that *the mummification of the umbilical cord is not of the slightest value as a proof of extra-uterine life.* Of course it is otherwise with the complete separation of the cord. This occurs from the fourth on to the sixth or seventh day. Only the grossest ignorance or carelessness would ever suppose that the cord had been separated by the natural process, when it had only been violently torn out of the umbilical ring; for, in the latter case, the edges are ragged and bloody, and can readily be distinguished even in putrefied bodies from an umbilicus actually cicatrizing. I scarcely need to add, however, that an umbilicus already cicatrized is of course an infallible proof that the child must have lived for at least from four to five days.

§ 100. Obliteration of the Ducts, etc., peculiar to the Fœtal Circulation.

As has been already remarked, the Prussian "Regulations" very properly do not require the medical jurist, at the autopsy of a newborn child, to pay any attention to the pervious or impervious condition of the *foramen ovale*, the *ductus arteriosus Botalli*, the umbilical arteries and vein, and the *ductus venosus*, as criteria of the existence of respiratory life, since it is self-evident these fœtal circulatory ducts must always be found pervious in *newborn* children, even when the widest possible signification is attached to this term, and it is made to include all the period from birth to the complete separation of the umbilical cord, so that their closure does not take place till so long after birth, that its discovery is no longer of any value. The *foramen ovale* is not fully closed before the second or third month.

Accurate anatomical investigations, particularly those of Elsässer,* into its gradual closure possess indeed an important physiological interest, but are only negatively of practical interest to the medical jurist, since no remarkable commencement of this closure is visible till after the lapse of the first few days of life, while it is precisely the first few hours, at the most the first day of life, that is in question in regard to newborn children. The same thing is true in regard to the *ductus arteriosus*, which is perfectly pervious for the first three or four days, and then commences gradually to contract, but a fine probe can be often enough passed through it at the end of eight weeks. The fine alterations in form which Bernt has described in relating his observations on the metamorphosis of this duct to a ligament, and which he wishes to be used as criteria, are consequently of no value at the medico-legal dissecting table. The *umbilical arteries* are the first of all the fœtal ducts to close, these commence to contract in from eight to ten hours after birth, but in general their complete obliteration does not ensue till after the lapse of from five to six days, while that of the umbilical vein is still later, and the *ductus venosus* is very often found quite open in children of from one to two months old. In accordance with this fact, long well-known and confirmed by general experience, it is most advisable to omit all consideration of the condition of these fœtal ducts at the medico-legal dissecting table, since official experience teaches that the consideration of cadaveric appearances, which do not actually belong to the subject in hand, especially of such subtilties as the steps in the process of closure of Botalli's duct as described by Bernt, is apt to make the judicial physician falter in his decision, and then "the wood is not seen for the trees."

§ 101. Bladder and Rectum Test.

The unfounded objections which have been raised against the trustworthiness of the docimasia pulmonaris, and the equally unfounded supposition that urinary and fæcal evacuation are exclusively respiratory acts—the falsity of which is proved by the well-known fact, that meconium is found in the liquor amnii—have given rise to the introduction of the bladder and rectum test into medico-legal practice. A full bladder or a rectum stuffed with meconium is held to prove that the child has never breathed, while an empty bladder

* *Op. cit.* s. 65, and Henke's Zeitschr. Bd. 64, s. 247, &c.

and rectum is held to prove that it has breathed! But what is held to be proved by the *coincident* discovery of a *full* bladder and an *empty* rectum, as I have found them unnumbered times, or by the *reverse*, I know not. It is not difficult to understand how of all places in the world, forensic medicine should in course of time become the receptacle of much trash, since the opportunity of acquiring any considerable amount of medico-legal experience is so rare: but it is almost impossible to understand how theories such as those involved in the bladder and rectum test have been able to gain admission (and to find a partial advocacy even in the most recent handbooks), since every midwife knows, that even the strongest and healthiest children do not always soil their napkins within the first few hours after birth, and this the most paltry of medical observations is sufficient criticism for this so-called "test." Any given child may, therefore, have lived three, six, ten or more hours, and may yet when dissected have its bladder and rectum, or at least one of these organs, filled. Or the child may have passed water and its bladder have been refilled, and be thus found on dissection. In other cases, the empty condition of both or either of these organs does not depend upon evacuation during life, but upon mechanical pressure applied to the abdomen during the birth, or in the manipulation of the body after death in unclothing or transporting it, as for instance readily happens in the bodies of female children, whose urine is very easily made to flow by pressure upon the region of the bladder. It is therefore perfectly right that no mention should be made of this absurd mode of proof in the "Regulations," and I may, moreover, warn the medical jurist that this test *must not be employed as adjuvant proof* of life having existed or the reverse, even in conjunction with other proofs, for it has no foundation or basis to rest upon, and the public prosecutor or advocate for the defence would justly find in its employment only a lever wherewith to demolish the medical opinion of the case. Of course I do not require to say, that the examination of the bladder and rectum of newborn children on account of other appearances that may possibly be present, must never be omitted at that, any more than at any other age.

§ 102. Ecchymoses.

The proof of extra-uterine life afforded by the existence of ecchymoses anywhere on the body of a newborn child, which was very

highly estimated by the ancients, and is by no means everywhere rejected by the moderns, rests upon the supposition, that the escape of blood from the vessels presupposes its circulation through them; consequently the existence of life. But in this instance also the commonest daily experience of a mere midwifery practice has been set aside in favour of an *à priori* dogma. This phenomenon, however, irrespective of its significance in relation to the question of life, is of not less importance in another point of view, inasmuch as when once these ecchymoses were recognised as proof of life having existed after birth, they were then, especially when the blood was more or less coagulated, regarded with equal certainty as the result of the employment of external violence. A two-fold error fraught with the most serious consequences! Nothing can be of less importance as evidence of the pre-existence of respiratory life, than any extravasation of blood which may happen to be found in the body. Mere exudation through the walls of the vessels; also, of course, rupture of the smaller vessels from putrefaction, with escape of their contents into the neighbouring tissues, explains the very frequent appearance of more or less considerable, often very extensive, extravasations of blood, particularly on the heads of children born putrid, in whose case, therefore, there could be no possible doubt as to the fact of intra-uterine death. Not less frequently, also, the rupture of vessels during labour, which need not necessarily be laborious, gives rise to actual ecchymoses, particularly under the scalp in the well-known form of the *caput succedaneum*. This cranial tumour seems much more frequently than is supposed not to be of a purely œdematous character, but actually to consist at bottom of a more or less copious extravasation of blood, which is only rapidly absorbed in those children which continue to live; and this I am justified in assuming to be the case from the constancy with which such extravasations are found at our medico-legal dissections. These are most commonly found in the cellular tissue beneath the epicranial aponeurosis in the form of a gelatinous clot which lies upon, or, in rarer cases, beneath the *pericranium*. A more exact description of these extravasations will be found in § 109. I cannot too stringently warn against the error, which as I happen to know from my official position is by no means rarely to be met with, of at once assuming this phenomenon to be the result of violence applied externally, or of the fall of the child on the floor at its birth. Inexperienced persons are specially easily led to make this

induction when they find coagula in these ecchymoses, and blood coagula in these subaponeurotic cranial ecchymoses are the very commonest of phenomena. I need not recapitulate here the opinions I have already (§ 11, Gen. Div., p. 23, Vol. I.) advanced in opposition to the erroneous dogma that blood does not coagulate after death, and which I have there supported by facts (Cases III. to IX.). And no one who has had occasion to dissect only a few such bodies* will be inclined to deny that such extravasations of blood, both fluid and coagulated, also occur very frequently in the bodies of children unquestionably born dead or even putrid. To this category also belong those rare cases in which children are born dead with the umbilical cord wound round their necks, and with a few actual ecchymoses—proved to be such by incision—in the mark of the cord, affording thereby another example of pre-respiratory extravasation of blood, also the cases already described (§ 40, Spec. Div., p. 124, Vol. II.) of capillary (petechial) ecchymoses beneath the pulmonary pleura, upon the aorta, heart, and pericardium in children which have indubitably died before their birth. EXTRAVASATIONS OF BLOOD, EVEN IF COAGULATED, ARE NOT OF THE SLIGHTEST VALUE AS PROOF THAT RESPIRATORY LIFE HAS EXISTED IN ANY GIVEN CHILD.

§ 103. CONCLUSIONS AS TO THE PROBATIVE VALUE OF THE DOCIMASIA PULMONARIS.

The medical jurist is perfectly justified, and may assume with a clear conscience and perfect unconcern as to the results of his opinion, that a child has certainly lived during and after its birth—

1. When the diaphragm stands between the fifth and sixth ribs;

2. When the lungs more or less completely occupy the thorax, or at least do not require to be sought for by artificial separation of the walls when cut through;

3. When the ground colour of the lungs is broken by insular marblings;

4. When the lungs are found by careful experiment to be capable of floating;

* Elsässer (*op. cit.* p. 62) relates a case in which there was not only a *coagulated* extravasation beneath the cranial aponeurosis, but also a fluid one beneath the pericranium, besides a fissure of the skull, and in which the forceps were not applied till after the child was certainly dead. *Vide* also Masohka's case, detailed in § 108.

5. When a bloody froth flows from the cut surfaces of the lung upon slight pressure.

Though the foregoing criteria must be regarded as complete proof, yet this may admit of being *strengthened* by others, such as the state of the umbilicus, the osseous nucleus, &c., particularly in those cases in which from the nature of the case, as from the kind of death, the degree of putrefaction, &c., certain of the criteria just detailed may be so altered as only to permit of a more or less positive opinion being formed from them; but all this has been already considered in the preceding paragraphs. Isolated cases will occasionally occur in which the medical jurist will require to employ both prudence and tact in support of the doctrines I have just laid down.

§ 104. When is the Institution of the Docimasia pulmonaris Superfluous?

Since the *docimasia pulmonaris* is intended to supply an answer to the query—Has this child lived after its birth? it will always occur to the physician to inquire, in the first place—whether from the bodily conformation of the child it could have lived, that is, have continued to live—been viable? In those countries where, as in Prussia, the penal code does not recognise either viability or unviability in any case, it appears to be superfluous ever to raise this preliminary question, since, strictly speaking, every fœtus must be presupposed to be viable. I do not require to point out here the absurd consequences which would result from such a conclusion. In fact, however, the opinions of individual judges vary very much upon this point, as I have had frequent practical opportunities of discovering when making medico-legal examinations in the presence of the usual law authorities. The physician must therefore always ascertain whether the presiding law official is willing to accept his statement that the child has been unviable, and therefore does not require any further medico-legal examination (including the *docimasia pulmonaris*), or whether the law official requires that the dissection be proceeded with notwithstanding the unviability, in which case it must of course (*Vide* p. 83, vol. I.) be carried out. In the first case the *docimasia pulmonaris*, even when its carrying out is not rendered impossible, will be omitted: 1st, in the case of all fœtuses of less than 180 days intra-uterine life (*Rhenish Civil*

Code, art. 312), in all those countries in which, as in the Prussian Common Law, the 210th day is appointed by statute as the *terminus à quo* viability commences, in all fœtuses under this age, as well as in all those monsters whose viability is rendered impossible by congenital malformation. 2. A child, in which the umbilical cord is already separated and the umbilicus cicatrized, is no longer a newborn one, and the institution of the *docimasia pulmonaris* would in such a case be perfectly superfluous. 3. This experiment would be equally superfluous should, before opening the chest, indubitable proof of life after birth be found in the abdomen. I refer to the proof of the positive active existence of the digestive function in the discovery of coagulated or half-coagulated milk in the stomach. For very obvious reasons this appearance will only be found in the very rarest instances of truly judicial cases; but cases nevertheless frequently occur in which children one whole day or even two days old, and already fed, have died from natural causes, and have then been, for various reasons, often only to save the burial charges, concealed and thrown aside, in such cases the condition of the stomach affords of itself the most conclusive proof of the fact of the child having lived. 4. Of course there is not the slightest necessity for instituting the *docimasia pulmonaris* when it indubitably appears from the condition of the body that the child has been long dead *in utero*; that it has been born *putrid*. *It is impossible to mistake the appearance of a child born putrid.* The swollen *cutis*, the vesicular elevation of the cuticle or its complete peeling off, the greyish-green coloration of the body, the putrid navel-string, the well-known stench, &c., do not constitute the diagnosis, since every child even when born alive undergoes these putrefactive changes in their turn at the proper time after its death. On the contrary, most of these characteristics are not exhibited by a child born putrid, and the putrefactive maceration in the warm *liquor amnii* is so very different in its operation from putrefaction external to the uterus, that it produces an appearance so specific as to be unmistakably recognised whenever it has been once or twice seen. In the first place, a child born putrid is remarkable for its penetrating stench, which cannot be hidden or concealed by a thin coffin or chest, &c., and which though so repulsive and indestructible, is yet not the usual well-known odour of putrefying bodies, but has something sweetish, stale, and undescribable about it which makes it all the more unendurable. The difference in the general colour of the skin in the two classes of

children is still more remarkable. A child born putrid has not a shade of green upon its skin, but is more or less of a coppery red, here and there of a pure flesh colour. Peeling of the cuticle is never absent, but close to recent patches of this character older ones are found upon the body, the bases of which are already dark and hardened. The excoriated patches are moist, greasy, and continually exude a stinking sero-sanguinolent fluid, which soaks through all the coverings of the body. The general form of such bodies is quite as remarkable as their colour. Whilst every highly putrefied corpse always preserves for long the roundness of the contour of the body, though its form is disfigured and distorted by intumescence, it must strike every one when a child born putrid is placed before him, how great a tendency is displayed by it to flatten out and, as it were, fall to pieces. Thorax and abdomen lose their roundness, their contour forms an ellipse, from the soft parts sinking outwards towards both sides. The head itself, the bones of which are loose and moveable as in every child's body, becomes flattened and the face thereby repulsively disfigured, as the nose is flattened and the cheeks fall to opposite sides. It is impossible accurately to describe the appearance of such a child, and it is not worth while to append an exact representation true to nature, since the sketch here given as accurately as possible is sufficient to characterise a child born putrid. A body which exhibits such appearances shows infallibly that the child has died within the womb, and consequently that any further medico-legal examination, including the *docimasia pulmonaris*, is perfectly superfluous. I have already (§ 94, p. 74, Vol. III.), stated that this is never to be omitted from any fear of its insufficiency in the case of the bodies of children putrefied in the ordinary way.

§ 105. How long has this Child lived, and how long is it since it died?

The presiding law official is in the habit of putting both of these questions to the medical inspectors at the time of the dissection, for the purpose of completing the summary opinion, after they have declared that the child has lived. The answer to the first question possesses a judicial interest, from the restriction of the term—Infanticide—to the killing of a child "during, or *immediately after*, its birth;" the answer to the latter question is of special importance to the Judge in the case of the bodies of unknown children (which constitute the larger proportion of such bodies), because it of course

coincides with the time of the mother's delivery, if the child have lived but a very short time, and the Judge acquires from the opinion of the medical inspectors a basis upon which to act in regard to the public summoning and examination of those suspected of maternity, &c.—The answer to both queries is chiefly to be found in the circumstances connected with each individual case. If the child have been viable, strong, and healthy, and there be no ground for supposing that there was any peculiar hinderance to the respiration immediately after birth, then respiration with all its consequences observable in the body must have been completely established in the shortest possible time, and it will not be possible to distinguish whether the child has lived half-an-hour or two or three hours. But this short duration of life is of importance in criminal jurisprudence because of the words "*immediately* after its birth." Should the child have lived longer, perhaps from two to three days, then, in order to answer this question, the signs of recent birth require to be considered. In regard to this point I have already given the necessary details in § 77 p. 8, Vol. III. Important errors in the estimation of this may be avoided by proper attention, since the whole period comprised under this head is very short. In regard to the second question: How long has this child been dead? All those various circumstances require to be considered, as in those ordinary difficult questions in regard to the period of death and the progress of putrescence, which are much the same in newborn children as at other ages, and which have been already gone into, in considerable detail, and to this I must now refer.* The medical inspectors will be more easily enabled to form their opinion when they learn where and how the body of the child has been found—in bed? in a warm or a cold room? in a cellar? in water? in the earth? naked? shut in a box? &c.—further, when and how long before the time of the dissection the body has been found, and where it has lain during the intervening period? &c. Questions which the medical inspectors are perfectly entitled to put, and which no judge will refuse to answer. When to these is added a knowledge of the atmospheric temperature prevailing at the time, and also of the kind of death suffered by the child, and when a general knowledge of those circumstances already so fully detailed is possessed, then it will be possible to give a general, at least approximatively correct, estimation of the time without much difficulty, and this will of course be all the nearer to the exact truth the greater the amount of practical experience possessed by the medical inspectors.

* Gen. Div. Chapter II., §§ 7-22, p. 14, &c. vol. i.

§ 106. Illustrative Cases.

Cases 337-352.—Docimasia pulmonaris carried out where the bodies were already highly putrefied.

From the very large number of instances in which I have instituted the docimasia pulmonaris on the bodies of newborn children, which constitute in Berlin almost the fourth part of the annual number of the medico-legal dissections, I shall now proceed to detail a few selected cases, in which the dissection and experiments were conducted in accordance with the principles I have just laid down, and under circumstances which usually, but unjustly, would be considerate to contra-indicate the institution of this test. A medical jurist is not, however, justified in rejecting any mode of proof because it may *possibly* no longer be able to contribute to the determination of the facts of the case. For my own part I have often succeeded in obtaining for the Judge, even in the case of the bodies of children completely putrefied, an amount of information such as could never be attained in any other way than by the much maligned docimasia pulmonaris.

CCCXXXVII.—A mature fœtus, highly putrefied, and already of a greyish-green colour, was found in the water. All the organs, even the lungs, were completely strewn with the bullæ of putrescence. These latter were dense, of a dark-brown colour, no bloody froth escaped from incisions made into them, and they sank completely in water both when entire and when cut in pieces.

CCCXXXVIII.—Precisely the same was the case with a female child also found in the water. The body was grey, the epidermis everywhere peeled off, the lungs retracted, dark brown, not marbled, dense. Every portion of them sank completely.

CCCXXXIX.—The body of this male newborn fœtus found in the water was in a very advanced state of putrefaction and completely emphysematous. The diaphragm was placed about the fourth rib, the lungs were dark brown, leathery, did not cover the pericardium, and sank completely.

CCCXL. and CCCXLI.—In the two following remarkable cases the results were very peculiar. The body of a mature female child, already blackish-green from putrefaction, was found in the water; the lungs were well-preserved, firm, dark brown, and did not crepitate. The heart, plentifully beset with putrefactive bullæ, floated; the

liver, steel-grey, and pultaceous from putrescence, floated, but the lungs, even to their smallest pieces, sank completely. Similar results were obtained in the case of an eighth-month fœtus, which was found, in the heat of summer, in a dry pit, and still united to the placenta. In the first place I may remark, that the umbilical cord was mummified throughout its entire length! (*Vid.* § 99, p. 83, Vol. III.) The fœtus was quite putrid and almost black. The lungs were of a bright-red colour, but were not marbled, and they sank, whilst the heart floated. In all these cases we had no difficulty in assuming it to be certain that the children had been born dead, since no other supposition was justifiable.

CCCXLII.—In the following interesting case the results obtained were not such as to justify a positive opinion. A mature male child was found in the water enclosed in a bag loaded with stones. The body was green from putrescence. There were many gaseous bullæ in the lungs, the result of decomposition; the left lung was completely retracted, the right one filled about one-half of the pleural cavity. No crepitation was heard on making incisions into them, and a little putrid blood flowed out of the cut surfaces. They floated together with the heart, but the heart itself, the whole lower lobe of the right lung and isolated portions of the left one, sank. The liver, however, floated. The diaphragm was placed at the fourth rib. The trachea was empty and brown from putridity. The stomach contained a teaspoonful of bloody mucus. The urinary bladder was empty, the rectum filled. The partial floating of the lungs might very reasonably be ascribed to their state of putrescence, yet though several important symptoms pointed to the likelihood of the child having been born dead, it was impossible to deny that respiration might possibly have been temporarily established. Accordingly we gave it as our opinion that the child had "probably" not lived subsequent to its birth, but had been born dead.

In contradistinction to these cases, I now proceed to relate another selection, in which the lungs floated notwithstanding the advanced state of general putrescence, and in which this floating, taken in connection with other concurrent criteria, permitted a decided opinion being given to the Judge.

CCCXLIII.—A mature newborn child found lying dead upon the street. Highly putrid. The lungs of a rosy-red marbled with blue, copiously strewn with the gaseous bullæ of decomposition. They completely filled the cavity of the thorax and floated perfectly. The

heart, however, and liver too floated from their advanced state of putrefaction. In spite of this, we gave it as our opinion that from the concomitance of the marbling of the lungs, their volume and buoyancy, there was "the greatest probability" that the child had been born alive.

CCCXLIV.—A mature female child found in the water, and already so far advanced in putrefaction that the little body was of a greyish-green colour. The colour of the right lung was a marbled rosy-red, that of the left one a brown-red. Both were strewn with gaseous bullæ; both of them, even the dark-coloured left one, floated perfectly not only when entire, but also when cut in pieces. Neither a sound of crepitation nor frothy blood were remarked on making incisions into the lungs, the absence of the latter was sufficiently explained by the high degree of putrescence. There was no water in the trachea, lungs, or stomach. The urinary bladder was empty, the rectum and large intestine fully distended with meconium. In accordance with these interesting and unusual appearances, we were obliged to give it as our opinion "that the child had probably breathed for a short time, but that the results of the dissection afforded no distinct conclusions as to the nature of its death."

CCCXLV.—This male child was found in the Spree perfectly putrid, and with its cranial bones already burst. The lungs were however well preserved. They completely filled the thorax, were both of a marbled rosy-red, both plentifully strewn with gaseous bullæ, and both floated perfectly. But the thymus gland also floated; the (empty) heart, however, did not do so. In this case incisions into the lungs produced a sound of crepitation and gave vent to a small quantity of bloody froth. On account of the putrescent condition of the lungs, the life of this child could only be assumed as "in the highest degree probable," while, of course, no opinion as to the cause of death could be given.

CCCXLVI.—A mature child found in a privy. Greyish-green from putrescence, with peeling of the cuticle. The lungs were of a brownish-red with many bright patches of mottling. They floated perfectly. The diaphragm was placed beneath the sixth rib. The trachea, œsophagus, and stomach were empty. The heart contained no blood. The brain was pultaceous from decomposition. It was assumed that the child had lived, but also that it had probably been dead before being thrown into the cesspool, as there was no trace of

suffocation in excrement. This probability was afterwards ascertained to be correct.

CCCXLVII.—A mature female child, grey from putrescence, the diaphragm high, between the third and fourth ribs. The colour of the lungs a bright brownish-red, marbled with blue. On both the right and the left lung there were gaseous bullæ the size of half a bean, and the size of millet-seeds along the edges of both the lower lobes. Both lungs floated perfectly, and not only crepitated upon incision, but also gave vent to much frothy blood, which was certainly remarkable considering the advanced state of putrefaction of the body. There was considerable cerebral hyperæmia and an extravasation of blood one line thick between the pericranium and the bones. The sinuses were much congested. The urinary bladder was empty, the rectum distended. We assumed that the child was mature, had lived after its birth, and had died from apoplexy from some unascertainable cause.

CCCXLVIII.—It was very remarkable to find at the inspection of this mature male child, which was found lying dead upon the street, with its body green from putrescence, that a flat stripe, soft to cut, and two lines broad, ran across the head from the occiput forwards across both ears and ossa zygomatica, being finally lost on the face; over the right parietal bone this stripe was of a brownish-red, but unecchymosed, everywhere else it was quite soft. The diaphragm stood between the fourth and fifth ribs. The lungs were of a reddish-brown, marbled with a faint blue; there were gaseous bullæ on the posterior surface of the right lung and on the upper edge of the left one. Incisions into the pulmonary substance gave vent both to crepitation and bloody froth. Both lungs floated perfectly. The heart was empty. Cerebral hyperæmia was still distinctly recognisable. We gave it as our opinion that the child had lived after its birth and had died from apoplexy; further, that the dissection revealed no appearance of any violence which might have been the occasion of this, and that the mark described had no connection with the death of the child, and had been occasioned by some bandage which most probably had been applied after death.

CCCXLIX.—A mature newborn child was removed from a cesspool in the end of May. The body was already of a greyish-green, the cuticle peeled off, and the remains of the navel-string, two inches long, torn across and not tied, were mummified. Upon the occiput beneath the occipital aponeurosis there was, as is so frequently the

case, a bloody coagulum, evidently the result of the act of birth; there was no appearance of any violence upon the body. The lungs were of a dark brownish-red colour, with distinct brighter red marblings. Here and there on both lungs there were gaseous bullæ the size of millet-seeds or beans. Repeated incisions into their substance gave vent not only to crepitation, but also to bloody froth. They floated perfectly and in every part. The position of the diaphragm was between the fifth and sixth ribs. We gave it as our opinion that the child had lived after its birth, and further, that the dissection had revealed no reason for supposing its death to have been produced by violence.

CCCL.—The body of a female child was taken out of the water and brought before us for examination, with a piece of string tied loosely round its neck, all its measurements, whether of diameter or otherwise, as well as its weight, showed it to be perfectly mature, yet the diameter of its osseous nucleus was only one line. It was greyish-green from putrescence. The navel-string was sixteen inches long and had not been tied. There was not a trace of any reaction from the string round the neck. The diaphragm was placed between the fifth and sixth ribs. The lungs completely filled the thorax, they were of a bright brownish-red colour, with only a few faint marblings visible upon them. In this case also, there were many gaseous bullæ upon the periphery of the lungs, particularly on their basis. They crepitated on being incised, but no bloody froth escaped; in regard to this, however, their advanced state of putrefaction must be taken into account. The lungs floated perfectly, but so also did the heart and liver. This case was not such as to permit the deliverance of any decided opinion, but neither did it preclude any opinion at all being given. Having due regard to the position of the diaphragm, the colour and volume of the lungs, as well as their buoyancy on the one hand, and on the other to the undeniable effects of putrefaction in the lungs and the buoyancy possessed by both the heart and the liver, we gave it as our opinion: that though there was no certainty, yet there was the greatest probability that the child had lived. In regard to the string round its neck, we had no difficulty in declaring that it must have been applied subsequent to death. We afterwards learned that the body had been fished out of the water by means of a stick to which the string had been attached!

CCCLI.—In the following case the colour of the lungs was quite

remarkable, and they floated solely from their state of decomposition. This female fœtus was taken out of the water and was from all its measurements, &c., evidently only an eight-months' child, it also had no osseous nucleus. Putrescence was very far advanced. The position of the diaphragm was at the intercostal space between the fourth and fifth ribs. The lungs were of a bright cinnabar-red, without any traces of either blue or brownish markings. They were much retracted. There was no appearance of any bloody froth on making incisions. Gaseous bullæ the size of millet-seeds were strewn over their whole periphery. The lungs, the thymus, the heart and the liver, floated perfectly. These appearances were sufficient to induce us to state that the child must have been born dead.

CCCLII.—A newborn female child was found firmly sewn in a sack and lying on the street during the heat of summer. It was unquestionably mature (twenty inches in length, six pounds and three-quarters in weight, &c.); the osseous nucleus was only two lines in diameter, the body was of a greyish-green, the cuticle almost entirely peeled off. The diaphragm was placed at the seventh rib. The liver was black; strewn with large gaseous bullæ, and floated. The spleen and kidneys were pultaceous. The stomach brownish-red from putrefaction and empty. The urinary bladder was empty; there was a quantity of meconium in the large intestine and rectum. The vena cava was empty. The lungs completely filled the thorax, they were of a dirty livid rosy-red and marbled, thickly strewn with many gaseous bullæ. They crepitated strongly under the knife, and in spite of the great general putrefactive anæmia there was a distinct escape of bloody froth from the incisions. They floated perfectly. There was a *caput succedaneum;* not a trace of any injury. We gave it as our opinion that the child had lived; we could not, however, answer the judicial query as to the length of time the child had lived, except in so far as the answer is comprised in that to another question of the Judge: viz., that the child could not have lived many days after its birth, which was indubitable.*

Cases CCCLIII. to CCCLXV.—Partial Sinking and Floating of the Lungs.

The cases here collected together are a few of those comparatively rare ones, in which only one lung, or in which considerable portions

* *Vide* also Case CCCLXXIII.

of one or both lungs float, while the rest sink. As the hydrostatic test by itself is incapable of affording satisfactory evidence in regard to the preëxistence of life, so in such cases as those that follow this question must be decided by the other appearances found in the body.

CCCLIII.—A perfectly putrid female child was found in a canal. It was sixteen inches long, and weighed three pounds seven ounces and a-half; we declared it to be a six months' fœtus. No injuries were visible. On the right lung there were gaseous bullæ, on the left not; the former floated, the latter sank. But when cut in pieces, only four portions of the right lung floated, while all the rest sank. Neither crepitation nor bloody froth were perceptible on making incisions into either lung. The colour of the lungs was a brownish-red, without any marbling. The general anæmia of the body was easily explicable by the advanced state of putrefaction in which it was. We gave it as our opinion that "most probably" the child had not lived.

CCCLIV.—It was ascertained that this mature male child was delivered by the forceps after a severe labour, and shortly after died from apoplexy. As is usual in such cases, the traces of the forceps were distinctly visible upon the body. On the forehead, and at the root of the nose, there were hard leathery portions of excoriated cutis, and a precisely similar patch upon the occipital protuberance. There was an extravasation of blood beneath the occipital aponeurosis. The vessels of the *pia mater* were much congested and the whole of the *basis cranii* had a layer of dark treacly blood spread over it, which is certainly a rare appearance. The right lung was of a bright brown colour with reddish patches on it, the left lung was of one uniform dark brown. On incising the right lung a faint sound of crepitation was heard, and a little bloody froth escaped; there was nothing of the kind seen or heard on cutting into the left one. The right lung floated perfectly, all but a few pieces which sank, and compression under water caused the usual pearly vesicles to ascend; the left lung sank completely. It was therefore evident that the right lung alone had commenced to respire.

CCCLV.—A case possessing a most unusual interest in regard to the docimasia pulmonaris. A mature female child (with an osseous nucleus of two lines) was found one evening in spring lying dead upon the floor of a house. Three days subsequently it was placed upon our dissecting-table, already greyish-green. The diaphragm was placed

between the fourth and fifth ribs. Gaseous bullæ were scattered through the thymus. The lungs were retracted. The left was of a uniform brown colour, the right of a bright rosy-red with a few bluish marblings. When the yet unseparated heart and lungs were laid upon the surface of the water, they sank but slowly, and from this it was to be expected that individual portions of the lungs would float when they came to be separated. The weight of the right lung was four hundred and ninety grains, that of the left only three hundred and ninety. When separated, the right lung floated, but when depressed beneath the surface it rose unusually slowly; the left lung sank at once to the bottom. When further divided into lobes, only the upper lobe of the right lung floated, while the others slowly sank. The two lobes of the left lung sank slowly. Finally, when cut into little pieces, only about a fourth part of the right lung was found to be buoyant, while only three pieces of the left lung kept the surface of the water. No other organ floated. The lungs were not in the smallest degree putrid, and I may add that the right one crepitated, and gave vent to a small quantity of bloody froth when cut into, the left one did neither. Evidently the child had made a few attempts to breathe; a small amount of inspired air had as usual got into the right lung, while a still smaller quantity had also got into the left one, and an apoplectic attack, the traces of which were distinctly visible, had ended its life immediately after its birth.

CCCLVI.—A mature female child was drawn out of a stream in July by means of a hook driven through its scalp. Its far-advanced state of putrefaction led to the conclusion that it must have remained for weeks in the water, for the head was black and broken up, the trunk green, and the cuticle peeled off. The diaphragm was placed beneath the fifth rib. The lungs were of a bright-brownish colour, here and there faintly marbled; they filled the thorax, but were strewn with numerous gaseous bullæ. Incisions into their substance gave vent to no sound of crepitation, or bloody froth, the high degree of putrefaction, however, readily explained the latter. They floated, all but four pieces of the left and two of the right lung, which sank. No other organ was buoyant. In this state of matters we gave it as our opinion "that the child had probably lived for a short time after its birth," as this idea alone seemed to reconcile the partially contradictory results of the dissection. Of course it is evident that in this, as in every other similar case, not even a probable idea could be formed as to the cause of death.

CCCLVII.—A case precisely similar to the last. On the 1st of November the body of a male newborn child was found in a bush in a garden, and was brought before us for dissection on the 5th, still quite fresh by reason of the cold harvest weather. The diaphragm was placed between the fifth and sixth ribs. The lungs were brownish-red; there were a few brighter patches on the right one, but none upon the left. The lungs while still united to the heart, sank. Separated from it, the whole of the right lung floated, the left one sank. When cut in pieces only four portions of the right lung sank, and the whole of the left. Accordingly the only opinion we could give with certainty was, that there had been a "short" life subsequent to birth.

CCCLVIII.—In this case also only one of the lungs floated, but the accompanying circumstances were different. This newborn boy was taken out of the Spree in June, the veritable representative of a body that had become quite putrid, and blackish-green in the water. The diaphragm stood high between the third and fourth ribs; the lungs were quite retracted, they were of a chocolate-brown colour without any brighter patches, and with many scattered gaseous bullæ, which were particularly large and numerous upon the right one. The lungs and the heart, still united, floated; when separated the right one floated, while the left sank. In neither of them did incisions give vent either to crepitation or to bloody froth. When cut in pieces the right lung remained completely buoyant while still one-half of the left one sank. In accordance with these results, it was evident that the trifling buoyancy possessed by the right lung depended solely upon its putrefied condition. Everything else discovered was in favour of the child having been born dead, and this was assumed to have been the case.

CCCLIX.—This child was found in the water at the end of August still attached to its placenta. The body was grey, whole of the cuticle peeled off. In regard to the dissection, it is sufficient to mention that the liver-coloured right lung sank, whilst the left, which was quite as brown and unmarbled, but completely strewn with gaseous bullæ, floated. The heart and liver floated. Evidently the floating of the one lung was in this case merely the result of putrefaction, therefore no opinion was given as to the life or death of the child after its birth.

CCCLX.—In this case, a partial sinking of the otherwise buoyant lungs was produced by hepatization. The child had died of pneumonia

four days after its birth, and was, therefore, no longer a newborn one. Both lungs were partially hepatized (red), and all these portions sank in the water (as they always do), whilst the other portions, though they did not crepitate, yet floated.

CCCLXI.—This was a rare case, it was that of a girl born in the eighth month, after an easy labour. Soon after its birth, the child had commenced to breathe with a loud rattling noise and *to spit out blood*, and died in the evening after living one day. Both lungs were of a very dark colour, and only the left one displayed several brighter and marbled patches. So great was the hyperæmia, especially in the right lung, that blood actually flowed from the smallest incisions. The hæmorrhagic effusion had completely destroyed the cells and rendered the parenchyma unrecognisable. Only the brighter portions of the left lung floated, the other portions, and the whole of the right lung sank, drawn down by the great mass of blood within them. Upon the heart there were many petechial ecchymoses the size of a lintseed. Its coronary vessels were turgid, but its cavities contained but little blood. This was certainly a very rare example of intense pulmonary apoplexy in a newborn child.*

Cases CCCLXII. to CCCLXVI.—Artificial Inflation in Medico-legal Cases.

I have already (p. 64, Vol. III.) pointed out, in consonance with general experience, that the possibility of the artificial inflation of the lungs of children born dead cannot be tolerated as an objection in forensic practice, and why this should be so. Whenever the matter is thought upon it must at once appear that many phenomena significant of respiration, which might arise from this inflation, must be accompanied by numerous peculiarities. This was the case in the following five examples, which constitute the only ones belonging to this category which have come before us.

CCCLXII.—A maidservant had secretly given birth to a child in her master's house, and was immediately ordered out of it! She wandered about with her child in a cold damp February without a roof to shelter her, till she was admitted into an hospital. The child was dead; she fancied, however, that she heard

* For cases of floating of one lung and sinking of the other, *vide* also Cases CCXLIII. and CCCC.

it cry but a short time before. *Attempts to resuscitate the child* were made by putting it into a warm bath and rubbing the body, but *not* by artificial inflation, as was specially mentioned in the evidence obtained by the police. At the dissection the following were the appearances found relative to this matter: the position of the diaphragm was between the fourth and fifth ribs; the stomach and urinary bladder were empty; a quantity of very dark meconium; inferior cava much congested; the distended lungs were of a rosy-red, deeply marbled with blue; incisions gave vent both to crepitation and bloody froth; they were perfectly buoyant; the heart was empty; the trachea empty; the brain hyperæmic. In spite of the possibility, under the circumstances, that artificial inflation might have been resorted to in this case, yet in accordance with the principles that have been laid down in the text, we could not hesitate to declare that this child must have lived. Further, we declared that the child had died from cerebral apoplexy from some unascertainable cause.

CCCXLIII.—This was an extremely intricate case, and if my opinion had not sufficed, and it had been brought before the different professional courts, it would have given rise to the most diverse opinions, which I willingly agree would have been perfectly justified by the peculiar circumstances of the case. An illegitimate female child was born in the eighth month (without any ossepus nucleus). According to its mother's statement, which seemed on this point a little hazy, it had never cried. Shortly afterwards a (very little known) physician was called in; he found the child apparently lifeless, and holding its nose attempted *to inflate its lungs* by blowing with his mouth directly into the child's. The dissection proved that this had not got into the stomach, since it was empty and collapsed as usual. The diaphragm was placed between the fourth and fifth ribs. The liver and vena cava contained much treacly blood. The right lung distended the thoracic cavity, the left one was retracted. Both lungs were of a decided bright brownish-red, mottled here and there; to this the middle lobe of the right lung presented a remarkable contrast from its bright cinnabar-red colour, in which there was not a trace of mottling. Both lungs crepitated under the knife and emitted bloody froth very copiously. Both lungs were perfectly buoyant. The trachea was empty and perfectly normal. Within the cranium there was not only well-marked hyperæmia but even small isolated patches of extravasation upon the base of the brain.

What ought to be deduced from these appearances and the known facts of the case? The remarkable contrast presented to the rest of the lung by the unmottled cinnabar-red of the middle lobe of the right lung, a colour which is acquired always and without exception by lungs artificially inflated, evidently pointed to an attempt of this nature, which had been so far successful. While the light-brown colour of the rest of the lungs; the mottlings, which though not numerous were still present; the perfect buoyancy of the lungs, which, as well as the entire body, were perfectly fresh, even to their smallest portions into which air artificially blown in could not have penetrated without of necessity altering the colour of the lungs; for the same reason, the crepitation emitted by the air on escaping, and finally and specially, the large amount of blood contained in the lungs, which never could have got there by mere insufflation—all decided me in coming to the conclusion that the child had been alive during and subsequent to its birth (and had died from apoplexy from a cause not revealed by the dissection), and in giving this opinion I did not exclude the possibility that air might have been artificially introduced into the lungs of the child after its death.

CCCLXIV.—In this case the medico-legal examination took place by reason of suspected carelessness on the part of the midwife, in whose dwelling and under whose care a girl had been delivered of a mature male child (nineteen and a-half inches long, six pounds in weight, osseous nucleus only two lines). The labour was said to have lasted five hours, and the child, according to the declaration of the accused midwife, was born dead. When, however, our opinion which was opposed to this idea, was subsequently brought under her notice, and it was pointed out that in other respects it was favourable to her, the woman, who had been much annoyed, recovered her composure, and explained in limitation of her former declaration, word for word as follows, "I cannot indeed state with certainty, whether the child may not have respired a few times after it was born, because the coverlet of the bed prevented the immediate observation of the child instantly after its birth." The fact that the midwife had left the parturient female at the critical moment, and also that there were a few slight scratches found upon the head of the child, had given occasion to this inquiry. At the examination of the body she had declared that the child's head had been long delayed in the fourth position, that it had thus become swollen, and that the child had been born dead. She then attempted to carry out the

"usual" means of resuscitation, "which consisted in that I first slapped the child's bottom, gave it a warm bath, squirted water with a syringe upon the pit of the child's stomach, gave it several air-baths, and finally cut the cord, which no longer pulsated." Subsequently she corrected this statement by saying that she first attended to the cord, and then instituted the attempt at resuscitation, amongst which, "as I previously forgot to mention," was included an attempt to "breathe in" air by putting her mouth upon the child's. The case happened in the beginning of April, and the body was still quite fresh when brought before us. I may say at once that the pretended scratchings were nothing more than a small and perfectly unimportant ecchymosis upon the left parietal bone, which we declared to have been the result of the tedious labour. The diaphragm stood between the fifth and sixth ribs. The liver, spleen, and vena cava contained much blood; the stomach, urinary bladder and rectum were empty. The lungs filled the thoracic cavity tolerably well, the edge of the left one reached the anterior surface of the pericardium. Their colour was of a cinnabar red, and displayed, though only "on a few isolated spots, a bluish mottling." They floated both with and without the heart, entire, and also when completely cut in pieces, they crepitated under the knife and emitted much bloody froth; the trachea was empty; the right side of the heart contained no blood, the left one but a few drops. Of course the cranial swelling containing a blood coagulum, the veins of the pia mater and all the sinuses were much congested. For similar reasons as those expressed in the previous case, we gave a similar opinion in the following formula: that it must certainly be concluded that the child had lived during and after its birth; that it died from apoplexy, and that the appearances on dissection had not revealed any reason for supposing that any blame was attachable to the midwife in regard to the death of the child.

CCCLXV.—In order to determine the suspected neglect of a midwife who had not appeared when summoned, we had to make a medico-legal examination of the body of a mature female child, which was stated to have been found suffocated and lying on its belly in bed beside its mother, a *married* woman, who had fainted. Another midwife, subsequently called in, found the child, some hours after its birth, lifeless; she, nevertheless, endeavoured to resuscitate it, and in doing so "blew air thrice from her mouth into that of the child." It was at once evident that this procedure had

nothing to do with the appearances found in the lungs. These were of a bright brownish-red, beautifully mottled; they were œdematous, contained a very great quantity of blood, almost entirely filled the thoracic cavity; both of them displayed a few subpleural petechial ecchymoses; they had depressed the diaphragm to the fifth rib, and floated perfectly. The trachea was distinctly injected, and contained froth, and a secondary hyperæmia of the brain completed the proof that the child, born alive, had died from suffocation. That it really had lain upon its belly seemed to be proved by the *post-mortem* stains which covered the anterior part of the body.

CCCLXVI.—This case (an extra-judicial one) was interesting from its being well known that air had been blown into the lungs, and also on account of the numerous subpleural ecchymoses (p. 126, Vol. II.), which were larger in this case than I have ever seen them. This boy, weighing seven pounds and a-half, was suffocated during its birth (in the Maternity Hospital), and air immediately insufflated, which did not pass into the primæ viæ, but passed plentifully into the lungs. These almost completely distended the thorax, were entirely of a bright cinnabar-red, without one trace of mottling, and exhibited numerous large subpleural air-bubbles, some of them the size of peas, others coalesced to a much larger size, evidently arising from rupture of the air-cells. On the right lung there were dark red ecchymoses, from the size of a pea to that of a fourpenny-piece; there were also smaller ones upon the pericardium and even on the diaphragm. The lungs floated, of course, and perfectly, and this buoyancy, as well as the air-bubbles, could not, in this perfectly fresh body (in February, with a temperature of +° 2 to °5 R. = °36·5 to °43·25 F.), have arisen from putrefaction.

In all these five cases the air was blown into the lungs by professional parties, and in four of them more or less air had actually got into the lungs. But from the peculiar concomitant circumstances of these cases, which were of course at once made known, neither they, nor any similar ones, have any relation to the great mass of ordinary dissections of newborn children which give occasion for the institution of the docimasia pulmonaris.

Cases CCCLXVII. and CCCLXVIII. — Bladder and Rectum Test.

Although I have already (§ 101, p. 86, Vol. III.) been compelled

to deny to the so-called bladder- and rectum-test all and every probative value, even that belonging to a mere assistant proof—although the cases already related afford sufficient evidence for the correctness of my opinion—still I shall here make room for two selected cases, because the life and death of these two newborn children were established previous to the dissection, in both cases, by witnesses present at the birth, the dissection having been carried out for other reasons, while both cases afford very striking evidence of the worthlessness of these so-called criteria.

CCCLXVII.—A mature female child was born *dead,* in the presence of the other inmates of the house. A young physician denounced the assisting midwife, and declared that she had occasioned the death of the child by her neglect in prematurely leaving the parturient female. The diaphragm of the child stood between the third and fourth ribs. The liver brown and dense; lungs, on being incised, gave vent neither to crepitation nor bloody froth, every portion of them sank completely, &c.; the rectum was full, but the bladder contained not a drop of urine.

CCCLXVIII.—Another mature female child was born in the presence of the relatives, but *alive;* it also cried, but speedily died from cerebral hæmorrhage, as was discovered on dissection (three drachms [imp.] of fluid blood were spread over the surface of the brain). An incompetent person, a so-called *wickelfrau* (monthly nurse), had conducted the perfectly natural labour, and the case, therefore, came under the cognizance of the law. The docimasia pulmonaris proved most distinctly that respiration had been established; but the bladder and rectum were both completely *distended!*

CHAPTER III.

KINDS OF DEATH PECULIAR TO NEWBORN CHILDREN.

§ 107.—General.

The newborn child may die, as at any other age, either from natural or violent causes of every possible kind, from injuries of every kind, from strangling, drowning, burning, poisoning, &c. I have, however, already fully considered all these various causes of violent death in the previous chapters of this work, and it is not my intention again to enter upon them in relation to newborn children, since these present no peculiarities in regard to them, and the diagnosis of death by strangulation or burning, &c., is essentially the same either in a newborn child or an adult. But the medical jurist has a direct and practical interest in such injuries and kinds of death as occur, and from their nature can only occur in newborn children, and also in those *post-mortem* appearances which may lead to errors of diagnosis and erroneous opinions in regard to these injuries and kinds of death, and these *specific* injuries and kinds of death I shall now proceed to consider. My present observations shall, like those hitherto made, be specially based upon my own personal observations, made upon the bodies of nearly *eighteen hundred* newborn children, some of which were born dead, and others had died shortly after birth, and which came before me in my official capacity either for inspection merely, or to be submitted to a complete medico-legal examination and dissection. These specific injuries and kinds of death may affect the child either before, during, or after its birth.

§ 108.—Death of the Child previous to its Birth.—Fatal Injuries in utero.

"Intentional killing* of the fœtus *in utero*, by means applied externally (or internally)," by the mother or by a third party, with or without the consent, knowledge, or desire of the pregnant woman,

* On the production of abortion,—*vide* Biological Division, Special Part, § 38.

is punishable according to the penal code (§§ 181, 182) with severe imprisonment in bridewell. The question thus arises, whether by "external means," taken in the widest signification of the words, including thus blows, kicks, things thrown against the pregnant woman, falls, &c., the fœtus *in utero* can be injured, and particularly whether it can thus be killed? In the first place, in regard to the case of *injuries (fractures) of the extremities* of the fœtus, occasioned by the application of external violence to the body of a pregnant woman, we cannot deny the causal connection of the two, inasmuch as well-observed cases exist in proof thereof. Such an occurrence, however, would only acquire a forensic interest should the professional party engaged at the birth be accused of *mala praxis*. The nature of the fracture (as recent, provided with callus, &c.), together with an accurate ascertainment of the nature of the labour, would in such a case be sufficient to guide the decision. Whether spontaneous fractures of the fœtal extremities can be produced by muscular contraction alone must be left to be decided by future observations. In one case in which the pregnant woman had sustained several falls, and in which there were subsequently found several fractures of the *very brittle* bones, both of the superior and inferior extremities of the fœtus, Herbert Barker,* the observer, considered that this spontaneous production of the fractures was more probable than that they had been produced by the falls (and rightly so, if we consider the circumstances). As a further illustration of this, an observation of Murray's† is given, in which the seventh-month child of a syphilitic mother was born with a fractured humerus and femur—*without the infliction of any* previous external injury upon the mother. But the occurrence of other and *more fatal* effects of violence inflicted on a pregnant woman can be just as little doubted as that of fracture of the bones of the extremities of the fœtus, since simple concussion of the uterus and of the fœtus may cause separation of the placenta with all its consequences, fatal concussion of the fœtal brain, rupture of blood-vessels, or internal organs, &c. (Injuries to the fœtus by penetrating wounds of the abdomen of the mother are, of course, excluded from consideration here.) Finally, however, in regard to fatal *cranial* injuries to the fœtus *in utero*, some doubt seems not unjustifiable when we consider—1. The protection the cranium enjoys from being surrounded by the liquor amnii; 2. The sheltered position of the head *in utero*; 3. The readiness with which cranial

* Quoted in Schmidt's Jahrb., 1858, No. 8, s. 195. † *loc. cit.*

injuries received during labour or at birth may be mistaken for similar injuries received *in utero* (§ 110); 4. The well-known frequency and obstinacy with which mothers, when accused, deny all knowledge of any such violence inflicted upon their child at or after the birth; 5. The *relatively* very small number of existing observations of fatal intra-uterine cranial injuries; and 6. The number of these relatively few cases which are found to be untrustworthy when critically examined. The most ancient of such cases is that detailed by Valentin:*—A pregnant woman was trodden on the side by a man during a scuffle. *Fourteen weeks* subsequently she was delivered of a healthy boy, and on the next day of a dead boy. "*Cute a cranio separata in omnibus capitis ossibus, v. g. osse frontis, osse syncipitis dextro et sinistro, osse occipitis, rubicundæ quædam et sanguine suffusæ maculæ, grossi aut quartæ Imperialis partis magnitudine repertæ fuerunt, quæ tamen omnino recentes cum sanguine videbantur.*" (? Yet the injury had happened a quarter of a year previously!) "*Pariliter omnes suturæ plus quam in recens natis observatur, distabant, ut ossa ad digiti latitudinem sibi invicem imponi potuerint.*" The fœtus was, however, in *an extreme degree of putrefaction!!* For the liver was black, and so soft that "*digitis comminui potuerit.*" The lungs—at least the right one—was black, "*ut partim putridi,*" &c., and "*brachium dextrum latusque dextrum fere nudum et cuticula destitutum videbantur, imo totum corpus ita pene constitutum erat!*" We see, therefore, that this case is of no value, and does not in the least prove what it ought to, since every child born putrid exhibits the same phenomena in a greater or less degree. Further, though we find Ploucquet's opinion quoted in favour of the occurrence of such cases, yet if we turn to the original,† we find, on the contrary, that though he quotes an observation from Gardner, and a second from

* *Corp. jur. med. leg. constans e Pandectis, &c. Francof.* 1722. Fol. Pars I. Sect. II. Cas. 18. *de contusione abdominis in gravida, abortum causante.* Zittman (*Med. For. Francof.* 1706, p. 1602) reports, indeed, another still older case (1699). It is, however, very defective in details, and is not, therefore, to be regarded as fully made out. The servant-maid had fallen (how or where not mentioned), and on the dead-born child there were "*sugillatio in fronte et brachio sinistro!*" Also "*tumor*" there, and of the "*labii superioris.*" The Faculty at Leipzig, however, declared themselves unable to decide whether this child had died or been killed *in utero* or *extra uterum.*

† Abhandl. über die gewaltsamen Todesarten., 2 Aufl. Tubingen, 1788, s. 281, &c.

Glockengiesser, yet that he himself expresses doubt upon the matter, and considers that the supposition of any such influence must be strictly limited. Gardner's case was one of severe labour, in which the child was born with a cranial tumour, and with fracture of the lumbar vertebræ. "It *seemed* as if this part of the child had been injured, and to judge from the age of the child and its degree of putrescence, this must have happened at least *one month* before its birth. When I asked the woman if she had met with any injury during her pregnancy, she answered that about *two months* previously she had received a violent blow upon the belly by falling on the edge of a large clothes'-basket." Thus the fall on the abdomen occurred two, and the injury one month before the child's birth! A severe labour, and a putrid fœtus! Probably the fracture of the vertebræ happened during the birth. Of Glockengiesser's case we only learn that "the cranium was broken into five pieces," but not a word more in regard either to pregnancy or birth! In the case published by Mende,* the faculty of Greifswald have declared in a very profound opinion delivered by them "that the child had not received a fatal injury previous to its birth by external violence inflicted on the body of its mother, whereof it had died four days after its birth, but rather that the imperfect nature of the dissection and the extremely meagre account given by the midwife of the course of the labour, gave occasion to assume, not with perfect certainty, but with probability, that the child had received these severe injuries, namely, the ecchymosis on the head, and the fracture of the right parietal bone, during *the act of birth itself.*"

In Albert's† case, in which the mother, two days before her confinement, fell with her belly upon a boundary stone, the child was born dead, and its left parietal bone, more ossified than usual, was separated from its connections with the bones around it. That portion usually united with the right parietal bone by the sagittal suture was separated throughout its entire length by a fissure eleven lines in breadth, so that the brain protruded, laid bare by the rupture of the membranes. The anterior and posterior edges of the parietal bones were separated from the contiguous bones, and somewhat depressed; the inferior edge was separated from the temporal bone, but protruded a few lines in front of it, and "two-fingers' breadth above its junction with the temporal bone it was scarcely perceptibly bent outwards. The bone itself was uninjured." The bone, there-

* Henke's Zeitschr. &c. iii. s. 277, &c. † *Ibidem*, xviii. s. 441.

fore, though so thin, was partly depressed, partly bent outwards, and yet not fractured, though it "was more than usually ossified." (?) What, however, is chiefly obnoxious to criticism in this case is, that we learn not one syllable as to the degree of putrescence of the child. Becher's case* was one of breech presentation, brought to a close with the forceps. Heyfelder's case† was also a forceps one! In Schmidt's case,‡ in which the mother received a violent blow upon the right side of the under part of the belly, the child was not born dead, but only apparently so, and it did not die till the following night. There was only a depression in the parietal region of the right frontal bone, the neighbourhood of which was neither ecchymosed, swollen, nor otherwise altered. At the dissection a little coagulated black blood was found at the most depressed portion of the bone; the bone itself was normal, and not discoloured. At the parietal edge close to the fontanelle there were two "trifling fissures." This case is certainly more remarkable than the foregoing; any other explanation, however, of the origin of this depression is much more probable than the supposed one of intra-uterine violence. Schnur's§ case is very like that just related; it is also peculiarly instructive in a forensic point of view, because it shows that the fœtus may remain alive even after the application of extreme violence to the pregnant abdomen. The woman in the eighth month of her pregnancy fell against the sharp edge of a tub; she fainted away, had hæmorrhage from the vagina, and had to be leeched, &c. After forty-seven days she gave rapid and easy birth (her eighth) to a healthy living child, on whose right frontal bone, without any injury being visible on the skin, there was an almost starlike depression of two lines in diameter, which had quite disappeared three months subsequently. In Wittzack's‖ case, the mother fell from a tree, and three months subsequently the child was delivered by *turning*, with a mere impression on the frontal and left parietal bones; it was born dead, and was not dissected. The case, therefore, permitted of this explanation. In regard, however, to mere depressions we must not forget the facts observed by such distinguished obstetricians as F. B. Osiander, Carus, d'Outrepont, Hohl, &c., which E. Gurlt in his mono-

* Henke Zeitschr. xxvi. s. 239.
† Schmidt's Jahrb. viii. s. 125.
‡ Neue Denkschr. der phys. med. Societ. zu Erlangen, 1812, i. s. 60.
§ Med. Zeitung des Vereins für Heilk. 1834, s. 152.
‖ *Ibid.* 1841, No. 82.

graph* has also most properly referred to, namely, that such depressions may and do arise quite independent of external violence, by the mere continuous pressure exerted on the fœtal head during pregnancy by protruding lumbar vertebræ or any osseous tumour, that this also may happen during the act of birth itself (§ 110), whereby even *fractures* of the cranium may occur during even easy births.† On the other hand, the two following cases, which were certainly very peculiar, are quite different from any of those already detailed. Blot‡ reported to the Academy at Paris the case of a primipara, aged twenty-seven, who, during labour, and before the rupture of the membranes, accidentally fell down two stories into the court-yard, whereby she had her thigh-bone broken, besides receiving many severe contusions. The child had now passed through the os uteri; much crepitation was felt on its head, and it was easily delivered with the forceps (dead). In the subcutaneous cellular tissue on the anterior part of the head there were many ecchymoses; beneath the uninjured scalp there was an extravasation of black fluid blood upon both parietal bones beneath the pericranium; there was a fracture of each parietal bone, which on the right one had separated a triangular piece of bone; there was no other injury either of the brain or the rest of the body. The case reported by Maschka§ is precisely similar to this one. A woman towards the end of the eighth month of her pregnancy leaped down from the second story, broke both her thigh-bones, and died in six hours. On the fœtus *in utero* there were "several fractures of both parietal bones with extravasation of blood and coagula, both on the external surface and within the cranial cavity."

The two latter cases, in particular, compel us to assume that *the child may be killed in utero by injuries to its cranium,* produced by violence inflicted directly upon the body of the pregnant woman, or by any violent impression made generally upon it, as by leaping, falling, or being thrown from a height, &c. The consideration that death from this cause is one of the rarest phenomena, while nothing is more common than the roughest usage of pregnant women without any ill effect upon the fœtus, will make the prudent medical

* Ueber intra-uterine Verletzungen (Separat-Abdruck aus den Verhandlungen der Gesellschaft f. Geburtshülfe zu Berlin), 1857, s. 29.

† *Vide* cases by L'Hermitte, d'Outrepont u.A. in der Prager Vierteljahrschrift, 1857, iv. s. 111. ‡ Gurlt, *loc. cit.*

§ Prager Vierteljahrschrift, 1856, Bd. lii. s. 105.

jurist careful not rashly to justify a murder committed after the child's birth. Such cases in which the child is born dead possess in general no judicial interest. In doubtful cases the following are the chief points to be attended to:—1. We must find out whether the child was born alive or dead; 2. If the mother be known, the relative dimensions of her pelvis and of the child must be ascertained; 3. The body of the child must be carefully examined for finger-marks, scratches, and other injuries different from those referred to; 4. The condition of the cranial bones must be scutinized with special reference to defective ossification (§ 110), should actual fractures be present; the state of the callus, if present, or of the effused blood, &c., must be examined; 5. All the circumstances of the fall, blow, or other act of violence must be carefully weighed; 6. The condition of the pregnant woman in the interval between the infliction of the violence and her delivery must be duly considered; 7. The nature of the labour must be accurately ascertained, in the case of secret and rapid labours, with special reference to a possible sudden prolapse of the child (§ 114), in the case of labours brought to an artificial close with special reference to the employment of instruments, because even in the case of such births the question of intra-uterine injury may be brought forward in the case of an accusation against an obstetrician in regard to his professional assistance.

The natural death of the fœtus *in utero* is far more frequent than a violent one, particularly in the case of those births which almost exclusively occupy the attention of the medical jurist—the illegitimate. In Berlin, amongst those children born in wedlock, one in twenty-five is born dead, while among those children born out of wedlock, the proportion is one in twelve.* The most common diseases discoverable in the bodies of those fœtuses which die in utero are, anormal position and malformation of organs, dropsies, pemphigus, &c., a correct description of which it is not my province to give.

§ 109. Death of the Child during Labour.—(*a*) Subcutaneous Effusion of Blood.—Cephalhæmatoma.

Death of the child during its birth is most frequently, indeed daily, caused by cerebral hyperæmia. It occurs in the body either

* *Vide* Casper's Beiträge zur med. Statistik und Staatsarzeneikunde. Berlin, 1825, s. 172.

as a visible congestion in the vascular membranes, in the brain itself and its sinuses, or as actual hæmorrhage, either, what is rare, inside the cranium in the most various places, or, what is extremely frequent, as an extravasation of actual coagulated blood, which has escaped from the ruptured capillaries or veins into the cellular tissue between the pericranium and the occipital aponeurosis, which is the most common form, or beneath the pericranium which happens much more rarely. The position of this coagulum is in general the posterior third of the parietal bone as far as the half of the occipital bone; as it, however, depends upon the position of the head during labour, it also occurs much farther forward, even as far as the frontal bone itself, or entirely on one side of the parietal bone. The scalp appears externally not in the least discoloured, and in recent bodies often not even swollen; sometimes there is found, however, even after concealed, and therefore presumptively rapid, births, a slight but visible degree of the usual (œdematous) cranial swelling. When the occipital aponeurosis is separated from the bones, the coagulum is at once brought into view, either as it were encapsuled in the cellular tissue, or lying as a dark layer of about one line thick upon the pericranium, and sometimes both of these are present at once. In a few cases, which may almost be said to be of daily occurrence, this extravasation is found only in insular patches lying near one another; in many others large continuous patches of the portions of the skull described, are found covered with it. It is of the utmost importance to remember the uncommon frequency of the spontaneous occurrence of this subaponeurotic extravasation, not to be led, from want of experience, into the unpardonable error of supposing that violence had been inflicted on the child. These effusions are not of themselves the cause of death, as is proved by their being very frequently found in children who have been known to die from other causes: indeed their origin in the act of birth, even where that is rapid (concealed), is so easily explicable, and their occurrence, as already said, is such a daily affair, that it appears reasonable to conclude that similar ruptures of vessels external to the cranial cavity occur in newborn children generally, even under the favourable circumstances of private practice, much more frequently than is supposed, and that they only do not become objects of observation, because when the child lives they are gradually absorbed (§ 102). When they are found in the body, not they, but the concomitant actual cerebral hyperæmia is to be looked upon as the cause of death.

That such a hyperæmia may prove fatal to the child immediately before as well as during labour, or in the act of birth, is frequently observed in the case of children indubitably born dead, whose bodies display these congestions to a greater or less, and often to a very great extent. After what I have already said (§ 102, p. 87, Vol. III.) I do not require again to state that this appearance does not in the very slightest prove that the child has lived *after* its birth.*

Allied to this appearance is the well-known cephalhæmatoma or bloody swelling of the head. But this peculiar extravasation of blood is by no means of so much importance in a medico-legal point of view as mere theoretic authors so often make out. It almost never occurs in medico-legal practice, and in truth for this simple reason that it has only to do with new-born children, while cephalhæmatoma does not commence to appear till several days after birth. Even in such cases however as may possibly occur—not one of which has ever come before me on the dissecting-table—it is quite superfluous to warn, as is so often done, any but a mere beginner of the danger of confounding this bloody swelling with an ecchymosis caused by external violence, since the peculiarly sharply-defined character of the cephalhæmatoma, and the well-known feeling of a roundish opening in the bone and distinguishes in the plainest manner this phenomena from an ecchymosis, which is never sharply defined, but always diffuse and irregular in its form and boundaries.

§. 110. Continuation.—(*b.*) Cranial Injuries.—Defective Ossification of the Skull-bones.

That the bones of the skull may be bent or broken, in and during the act of birth, is indubitable, and has long since been set down as established both in the practice and literature of obstetrics. That medico-legal practice, therefore, has only rarely to deal with fissures and fractures of the skull of newborn children, which, from their accompanying circumstances can be ascribed to the act of birth, this is readily explicable from the fact that these accidents are chiefly caused by severe labour, whether that be produced by the peculiarity of the child or of the maternal pelvis; whilst from the very nature of the matter only the results of concealed, and consequently more or less very rapidly ended, births, come to the cognizance of the law.†

* *Vide* § 115 in regard to this appearance in a diagnostic point of view.

† On cranial injuries after birth—*Vide* §§ 114, 115.

For the same reason fractures of the extremities, fractures of the spine, rupture of the skull with protrusion of the brain, and the other like results of extremely tedious and difficult labours, do not occur in medico-legal practice; and if perhaps from some quite peculiar circumstances, an exceptional case of more or less important injuries to the child, from a tedious yet concealed delivery, should come before the medical jurist for his opinion, there would be no difficulty in arriving at a just conclusion, by giving due consideration to this tedious labour, whose occurrence and course the (discovered) mother would have no interest in concealing. To this it may be added that in such a case the child is usually born dead, and the case therefore could scarcely possess any judicial interest whatever. More frequently there is observed, even in concealed births, a mere depression or mark upon the thin cranial bones, particularly the parietal bones, which may be produced even in relatively easy births, by the pressure of a greatly protuberant sacral promontory. Such a depression of itself is not to be regarded as a cause of death, since it is often enough seen in practice, even in children which continue to live (§ 108). *Fissures,* which from the great tenuity of the fœtal cranial bones, are also *fractures,* are a much more important result of the act of parturition. Accurate observations* have shown that these may possibly occur even where the labour has not been particularly tedious or difficult, and has been concluded without any artificial assistance; *they may, therefore, occur in primaparal and in concealed births.* These fissures and fractures have been erroneously termed "congenital," as if they had existed in the fœtus previous to the commencement of labour, while they are the result of that act. They prove fatal to the child either at once, or after it has respired a few times, as the docimasia pulmonaris subsequently proves, or life may continue for a few days and cease under symptoms of continually increasing pressure on the brain. They occur almost exclusively in the parietal bones, commonly only in one, sometimes and usually transversely to the saggital suture; at others, but more rarely stretching from the frontal bone, more or less parallel to the sagittal suture. Most generally only one such fissure exists, at others there are several. On a close inspection the finely serrated edges of the fissure are usually found to

* By Meissner, Carus, E. v. Siebold, Chaussier, Ollivier, d'Outrepont, Hörc, Mende, and Siegel. *Vide* C. F. Hedinger, über die Knochenverletzungen bei Neugebornen in med.-ger. Hinsicht. Leipzig, 1833.

display a faint ecchymosis. The diagnosis of such fissures and fractures from similar ones which have been produced after birth by any kind of extra-uterine violence, may be difficult, and must always be determined by the actual circumstances of each individual case. Traces of violence externally visible on the body, such as ecchymosis and wounds of the scalp, which are not found in the so-called "congenital" fissures and fractures I have been speaking of; other injuries, found either on the body of the child or internally, such as important anormalities of the cerebral membranes, of the brain itself, of the other cranial bones, or of the base of the cranium, all point to the *post natum* origin of the fissure. There is, however, one circumstance of not very rare occurrence, which permits us to conclude with the highest probability, if not with absolute certainty, that the injury has occurred in the birth, with all that follows from such a conclusion in regard to the criminal bearings of the case. I mean the discovery of *defective ossificatiqn* in the skull of a newborn child. It is somewhat semarkable that this very important appearance, which might so readily lead to dangerous mistakes, has received scarcely any notice from modern authors, while the more experienced among the earlier writers must have paid some attention to it, since they observed it on the body.* An arrest of the process of ossification occurs not only in the case of immature children, but even in those which present the phenomena of maturity in all their completeness, not only in those which are generally ill-nourished, but even in those children which are of the average weight of mature and well-nourished fœtuses. I have already (§ 80, p. 23, Vol. III., and § 97, p. 79, Vol. III.) shown this to be the case in regard to the osseous nucleus of the femoral epiphysis. The bones of the skull have also their ossification frequently retarded, and this defect is oftenest observed in both the parietal bones; also in the frontal bone, and most rarely in the occipital bone. If the bone in question is held up to the light, this is seen to shine through the opening, which is closed only by the pericranium. When the periosteal membrane is removed, the deficiency in the ossification is seen in form of a round,

* Büttner, in his work—somewhat obsolete, indeed, but yet instructive, from the large experience which he had occasion to accumulate as "Samländischer Kreisphysicus," entitled "Vollständige Anweisung wie u. s. w. ein verübter Kindermord auszumitteln sei," Königsberg, 1771, s. 82, describes this defective ossification uncommonly true to nature. Mende also describes it, and apparently from personal observation.

or irregularly circular opening, not often more than three lines in diameter, though frequently less; its edges are irregular and serrated; these edges are *never depressed as is the case in fractures;* and neither they, nor the parts in their neighbourhood, are ever observed to be ecchymosed. In order finally to render it impossible to mistake such a cranial deficiency for a fracture, we have only to examine the neighbourhood of the opening by holding the bone against the light, and we shall always find that within a greater or less circumference, there are other defective pieces in the bone; that is, that there are patches of the osseous tissue which are as thin as paper, and are translucent. I can certify, that a careful consideration of these diagnostic marks has prevented my ever committing a mistake in the diagnosis of doubtful cases. Plate VII., Fig. 20 and 20*a*, gives a very natural representation of such defective ossification, and in further elucidation of this appearance, a due consideration of which is of the utmost practical importance, I append the following selected observations.

§ 111. Illustrative Cases.

Case CCCLXIX.—Defective Ossification with Fissure of the right Parietal Bone.

A newborn male child found dead on the street. The body was (in January) quite fresh. Its length twenty inches, weight seven pounds and a-half; cranial diameters, which were respectively three inches and a-half, four inches and a-quarter, and five inches, &c., all proved that the child was perfectly mature, and its life subsequent to birth was also proved by results of the docimasia pulmonaris. The face, neck, breast, back, and inferior extremities exhibited distinct traces of pemphigus. On the tuberosity of the right parietal bone there was an irregular roundish opening in the bone one line and a-half in diameter, and at one line's distance from it there were two similar openings each two lines in diameter, and united with each other by means of a fissure. The edges of these openings were much serrated, were not ecchymosed, and the bone for half-an-inch round these openings was as thin as paper and translucent. The maturity and life of the child subsequent to its birth were declared in the opinion given by us; and we further stated that the injuries to the bones were not the result of external violence, and had no connection with the cause of the child's death.

Case CCCLXX.—Defective Ossification in the left Parietal Bone.

According to the statement of the midwife, who was called in immediately after the delivery of the mother, a maid-servant, who had secretly given birth to this child, it was then just in the act of drawing its last breath. The child, a boy, was perfectly mature (seven pounds, twenty inches, cranial diameters three and a-quarter, four and a-quarter, and five inches, &c.). The lungs were of a cinnabar-red, mottled with blue, frothed and crepitated on being incised, and floated perfectly. In the middle of the left parietal bone there were two roundish openings close to one another, each three lines in diameter and with serrated edges; the bone surrounding these openings was not in this case remarkably translucent. It was particularly interesting to find that a narrow spicula of bone ran right across one of these openings, thus at once completely removing every possible doubt as to the nature of its origin in defective ossification. The child had died from hyperæmia. After we had explained the nature of the apparent injury to the bone, the case was not further followed judicially, as the law takes no notice of the mere concealment of an illegitimate pregnancy or birth.

Case CCCLXXI.—Defective Ossification of both Parietal Bones.—Severing the Umbilical Cord close to the Umbilicus.—No Hæmorrhage.

This secretly born female child was said to have been born dead, the results of the docimasiâ pulmonaris, however, proved indubitably that it had lived, and had died from apoplexy. The length of the child, nineteen inches, and its weight, six pounds and three-quarters, all indicated its maturity, while the somewhat short cranial diameters, three inches, four inches, and four inches and three-quarters, and also the circumstance that along with the body the placenta (with the whole of the cord, which had been severed close to the umbilicus) was brought before us, all pointed to the probability of the birth having been precipitate. There were two defects in the ossification of the left parietal bone, one triangular in shape, the other the size of a fourpenny-piece. The edges of both were strongly serrated, so that comparatively long spiculæ stretched into the opening. There was

also a similar defective patch, the size of a fourpenny-piece, on the right parietal bone. On that part of the occipital aponeurosis corresponding with the vertex there was on its internal surface a circular extravasation of coagulated blood about a line thick, without the slightest trace of any violence having been applied externally. Two small fissures diverged from the circular opening in the left parietal bone. The body was of the usual corpse colour, and not that the result of hæmorrhage; the lungs were not pale, but of a reddish-blue and mottled; the liver was very hyperæmic, and the apoplectic cerebral congestion present was very decided. The child had, therefore, certainly not died from hæmorrhage from the divided umbilical cord; whether that had been severed merely after the complete cessation of the pulsation, or after the actual death of the child could not of course be ascertained. The whole of the appearances were in favour of the probability that the child had died from apoplexy produced by a fall on the head by precipitate birth, and this probability was made the basis of the opinion we delivered.

Case CCCLXXII.—Defective Ossification in both Parietal Bones.—Doubtful Death from Drowning.

The body of this firm, mature, newborn boy was found in the water close to the bank, at an atmospheric temperature (in September) of $+5° - 8°$ R. $= 43°{\cdot}25 - 50°$ F. It was, even to the umbilical cord, still perfectly fresh, and we were therefore able to answer the question put to us as follows:—that it had not been more than three or four days since the child had been born, and had died. The life of this child subsequent to its birth could not be doubted. The position of the diaphragm below the sixth rib; the perfect, even somewhat extravagant, distention, of the lungs, which, as in those drowned, pressed close to the ribs; their very bright-red, and dark-mottled colour; the amount of blood and air contained in them, and their perfect buoyancy, all spoke in favour of this. The trachea was pale and empty and so was the stomach. The heart contained almost no blood. The abdomen displayed nothing remarkable, but there was apoplectic hyperæmia within the cranial cavity. Upon the vertex and the right side of the frontal bone there were small extravasations beneath the occipital aponeurosis, and both the parietal bones displayed precisely those defects in ossification exhibited in the representation, Plate VII., Fig. 20. Besides the statement already

made as to the probable time of the birth and death of the child, we also stated, in answer to questions put to us, that the child had been mature and had lived; that it had died of apoplexy; that it was not improbable, that the child had died in the water (been drowned), but that it could certainly have lain but a short time in the water; and this was indubitable, since neither the hands nor the feet displayed the slightest trace of maceration.

Case CCCLXXIII.—Defective Ossification in both Parietal Bones.—Doubtful Death from Drowning.

This case very much resembled the one just related. The new-born boy was taken out of the water already (in July) much putrefied; its head was black, the rest of the body greyish-green. The degree of internal putrescence corresponded with the external appearance: for instance, the liver floated, &c. Nevertheless we did not set aside the case as unfitted for further examination, for this was by no means the case. The diaphragm stood between the sixth and seventh ribs, the stomach was empty; the lungs almost completely filled the thorax, the right one was strewn with a considerable number of putrefactive bullæ the size of millet-seeds; the colour of both lungs was a livid dirty-reddish with bluish patches; both crepitated when incised, and in spite of the putrescence gave vent to a bloody froth. They were perfectly buoyant, all but a piece of the left lung the size of a bean. The occipital aponeurosis was uninjured, as was also the rest of the body. In both parietal bones there were patches of defective ossification of unusual size, for in each there was an opening half-an-inch long and a quarter-of-an-inch wide, with serrated edges and the surrounding bone no thicker than a sheet of paper. From these openings serrated-edged ecchymosed fractures one inch and one inch and a-half long stretched away towards the vertex and the occipital bone. Of the other appearances I need only now mention the cleanly-cut umbilical cord, which was not less than twenty-seven inches long. On account of the position of the diaphragm and the condition of the lungs, it must be assumed that the child had lived, and because of the absence of any corresponding appearances, that it had not been drowned. The cranial injuries might have arisen from violence inflicted on the body while in the water, or in taking it out; on the other hand, the uninjured state of the cranial coverings and of the rest of the body was against this view; or they might have been

caused by violent blows on the head, but these would also have left behind more important and more visible external evidence; or they might have been produced by the accidental fall of the child during delivery, a consequence which must have been favoured by the length of the umbilical cord, and by the extraordinary deficiency in the ossification of the skull, and which explained the fractures of the skull in the simplest manner consistent with experience. We gave our opinion in accordance with these facts.*

Case CCCLXXIV.—Defective Ossification of both Parietal Bones with Fissures.—Respiration in a closed box.

The following case was interesting in many points. An unmarried maid-servant had some years previously already given birth to a child, and had concealed this pregnancy up to its close; she was secretly delivered about seven o'clock one April morning, and believed the child to be dead, for which she gave the usual reasons. Certain it is, that she placed the child in a chest of drawers and closed the drawer. *Two hours subsequently* her fellow-servant and a sewing girl who was occupied in the room, to their great surprise heard the cry of a child proceeding from this chest of drawers, and at once discovered it lying in it, fresh and healthy. It was taken to a relative to be brought up, but it died there "quietly" at seven o'clock in the evening, after having lived precisely twelve hours. The examination in the first place showed the perfect maturity of the child, which was a very strong one, measuring twenty-one inches, weighing eight pounds and a-quarter, and with cranial diameters of corresponding development. There was nothing remarkable found in the abdomen, except perhaps that in the stomach there were two teaspoonfuls of a thickish glutinous, brownish, somewhat bloody and fermenting fluid, which appeared to have been given to the child as food. The urinary bladder was quite empty and the large intestines had only a small quantity of meconium in them. On opening the thorax the cause of death was seen to have been a very well-marked pulmonary apoplexy. The lungs were blood red, mottled with rosy red, they crepitated and gave vent on incision to an extraordinary large quantity of a dark blood-red froth. Moreover, they were of the very considerable weight of three ounces, fourteen drachms (imp.); they were perfectly buoyant. The larynx

* *Vide* Cases CCCLXXV.–CCCLXXXIV.

and trachea were perfectly empty and normal, and the heart empty. The appearances in the cranial cavity were extremely interesting. Upon the occiput there was a small cranial swelling of the usual character; on the left parietal bone there were three blood coagula, each one inch long, two lines broad and about half-a-line thick. After removing the bone, the dura mater was found about the centre of the bone to be loosened and elevated as a bag in which there lay about half-a-teaspooonful of dark and very fluid blood. After removal of this membrane and the pericranium, we found on this position of the bone, three openings, about the size of peas, with the usual finely serrated and perfectly unecchymosed edges; and the surrounding bone was translucent, as usual in all such cases, when held up to the light, in this instance for the space of one quarter of an inch. From the inferior opening a perfectly straight, fine and scarcely serrated unecchymosed fissure stretched away towards the sagittal suture, and a second one ran almost parallel with it from the superior opening into the third one (*Vide*, the representation of the preparation, Plate VII., Fig. 20*a*). A precisely similar appearance was found in the vaulting of the right parietal bone, only that here there were only two openings found in the bone. It is remarkable that the cranial cavity and the brain showed no trace of hyperæmia, and also that in spite of the defective ossification of these two cranial bones, the osseous nucleus of the femoral epiphysis still measured three lines and a-half in diameter. The opinion given in this unusual case was: that the child was mature, had lived, and had died of pulmonary apoplexy, but that there was no reason to suppose that this had been caused by violence, and in particular that the cranial injuries could not be regarded as such a cause, any more than the shutting up of the child during two hours in a chest of drawers.*

§ 112. CONTINUATION.—(*c.*) COMPRESSION AND COILING OF THE UMBILICAL CORD ROUND THE CHILD'S NECK.—THE MARK OF STRANGULATION.

The *compression* of the umbilical cord when prolapsed is just as likely to occasion the death of the child during delivery, as its being *coiled round the neck* is unlikely to do so, as every obstetrician knows. Hohl† has observed in two hundred births the umbilical

* *Vide* Case CCCLXXXIX. † *Op. cit.* s. 456.

cord coiled round the neck one hundred and eighty-one times; the result of these births was one hundred and sixty-three living children and eighteen dead ones, and amongst these eighteen there were seven cases in which the coiling of the cord could be proved to have no hand in producing death, and in the remaining eleven it could not be proved to be the sole cause of death. Mayer, indeed, reports from Nægele's clinique, six hundred and eighty-five cases of children born with the umbilical cord coiled round their neck, of which only eighteen could be proved to have been killed thereby.* On the other hand, in seven hundred and forty-three cases of prolapse of the cord, collected by Scanzoni, four hundred and eight of the children were born dead,† or nearly fifty-five per cent. The physiological cause of death in such cases has been already related under the head of Death from Suffocation, § 40 p. 124, Vol. II. In the circumstance that death in such cases is caused by preventing the blood altered in the placenta from reaching the fœtus, so that it is forced to make instinctive respiratory movements and is suffocated; we have also an explanation why the *premature separation of the placenta* and *the death of the mother in the act of delivery* produce a similar result,—death of the child by suffocation. According to the admirable recent works upon this subject, particularly Hecker's, which adduces many accurate observations, besides carefully collecting all that had been previously written on the subject (*op. cit.*), this concatenation of events in the death of the child under the circumstances mentioned can be no longer doubted. All the earlier opinions, such as that the cooling of the cord by its prolapse produced death, must be regarded as for ever set aside. For forensic medicine this result is of considerable value, inasmuch as it is now determined that by spontaneous procedure during delivery alone, the death of the child, still in the birth, may be caused by suffocation which may be rendered visible in the body by the most exquisite appearances, particularly by the capillary ecchymoses already referred to (p. 126 Vol. II.), and the medical jurist is not, therefore, justified by these appearances alone in accusing any one of a crime. Good observations have also proved that the coiling of the cord round the neck when it does kill, may prove fatal in this way by interrupting the placental circulation, that consequently in these cases the appearances due to death from suffocation may be found in the body, and

* *Vide* Hecker's treatise (quoted at p. 127, vol. II.) s. 30.

† Lehrbuch der Geburtshülfe, 3 Aufl. Wien, 1855, s. 682.

indeed that this kind of death is that most frequently observed in such cases. But the appearances due to death from suffocation are not those solely and exclusively to be found, and I cannot agree that, as is supposed, death by coiling of the umbilical cord round the neck can never occur from cerebral hyperæmia, and never does so occur; two observations, in which indeed actual cerebral hæmorrhage was the result of the constriction of the neck by the cord, have been seen by us (Cases CCCXXVII. and CCCXCIX.), prove the opposite, and as positive evidence have a decisive value greater than many negatives. Scanzoni has also in twelve cases of fatal prolapse of the umbilical cord found cerebral hyperæmia four times.* In accordance with the results of his ingenious experiments he assumes that in both cases, prolapse and coiling of the umbilical cord, the kind of death is determined by the different amount of compression sustained by the cord, which is sometines greater, at others less, at one time affecting all the vessels of the cord, at others only a certain number of them, and upon this it depends whether the communication between the fœtal and maternal blood and the resulting respiratory function of the placenta is completely put a stop to, or whether by one or both of the arteries remaining pervious anæmia is produced, or by their closure, and the persistent patency of the veins, hyperæmia and apoplexy of individual organs are brought about. This view explains the diversity in the appearances found in such cases in a most satisfactory way.

It is of the greatest importance to be able to distinguish intentional strangulation from that produced by the umbilical cord. *The mark produced by the coiling of the umbilical cord round the neck* runs, however, without interruption right round the neck,—a state of matters found also indeed in cases of strangulation,—but rarely in cases of hanging, and only then when the cord was made into a running noose. The mark of the umbilical cord, moreover, is broad, corresponding with the breadth of the cord, circularly depressed, grooved, everywhere quite soft; never excoriated, as so often happens where rope or other hard and rough implement of strangulation has been employed. Opinions are very much divided in regard to the question of ecchymosis in the subcutaneous cellular tissue beneath the mark produced by the umbilical cord. Klein† and Elsässer‡ never have

* *Op. cit.* s. 682.

† Hufeland's Journal, 1815.

‡ Schmidt's Jahrbücher, vii. s. 204.

observed this, and decidedly deny its occurrence, while Löffler,* Carus,† Schwarz,‡ Albert,§ Marc,‖ Hohl,¶ &c., have observed ecchymoses. They certainly do not occur in every case, and are probably never found when the death of the child ensues so suddenly that they have not time to form. That, however, true ecchymosis, actual extravasation of blood, proved not merely by its livid colour, but also by incision, may be formed, I have frequently observed (*Vide*, amongst others, Case CCCXXVII.), whilst true ecchymosis never occurs in the case of death from intentional strangulation. It is very rare, however, even in the case of a mark produced by an umbilical cord, that the groove is ecchymosed throughout its whole extent, in general it is so only in isolated spots. Further, as the noose is seldom a single one, but commonly two- or three-fold, so the mark left by it is manifold. A mummified, parchment-like, unecchymosed depression points in every case to strangulation by a hard and rough body. The consideration of all these circumstances will determine the diagnosis in each particular case.—I take this opportunity of referring to an error I have frequently seen committed by inexperienced persons, such as students or candidates for examination, &c., who are apt to mistake an appearance on the body of a newborn child for the mark of a cord with which it has nothing to do. If, for instance, we examine a number of fat and fresh bodies of children, especially in winter, we shall readily perceive it to be a possible error to mistake *the folds of the skin, produced by the movements of the head, and which remain strongly marked in the solidified fat,* and are very prominent, particularly in short necks, for the mark of a cord, unless we correct our erroneous impression by a proper consideration of the various criteria belonging to a true mark of strangulation, which will speedily teach us the truth.

§ 113. Continuation.—(*d*) Constriction by the Uterus.

A spasmodic contraction of the uterus round the neck of the child may produce the same effect as constriction by the umbilical cord,

* Hufeland's Journal, Bd. xxi. s. 69.

† Leipziger, Liter. Zeitung, 1821, s. 583.

‡ Henke's Zeitschr., Bd. vii. s. 129, &c.

§ *Ibid.* Bd. xxi. s. 183; and Bd. xlii. s. 207.

‖ Along with four of his colleagues, in a case reported upon by them in common, *vide* Devergie, *op. cit.* s. 622.

¶ *Op. cit.* s. 457.

and may also prove fatal to the child during its birth. Though Mende and others have denied the possibility of this occurrence, yet trustworthy observations have placed it beyond a doubt. Hohl,* in a case of partial spasm of the uterus at the entrance of the right *tuba*, found upon the child a mark caused by the stricture, which commenced above the genital organs, and ran obliquely downwards over the anterior and external surface of the right thigh. In another case of breech presentation the os uteri, after the passage of the body, contracted spasmodically round the neck of the child, and that so firmly that Hohl could only with difficulty effect its extraction. Round about the neck of the dead child, and particularly on its anterior half, there was a groove almost the depth of the thickness of a finger, which was in patches of a bluish colour. Unfortunately, no dissection of the body is reported. Löffler† also felt during a delivery a firm constriction of the uterus, and subsequently found a livid stripe of the breadth of three fingers running round the body of the dead-born child. This peculiar and certainly extremely rare cause of death to the child during delivery possesses, however, scarcely any medico-legal interest, since its occurrence presupposes a tedious and difficult labour, which cannot be concluded without the presence of witnesses and experts, who can give to the Judge a sufficient explanation of what took place during delivery.

§ 114. Death of the Child Subsequent to Birth.—(*a*) By the Fall of its Head on the Floor.

For the last two centuries and a-half (Zittman) all obstetrical and medico-legal authors have assumed the possibility of a child, in a natural but precipitate delivery, falling so violently head-foremost from the birth as to injure itself, and that even fatally. The danger of such an opinion in a criminal point of view, the possibility that a child-murder actually committed might be obscured by the declaration of such an accident on the part of the accused, has never been denied. Eight-and-forty years ago, however, Klein‡ came forward with the statement that precipitate delivery is by no means attended with the dangerous results so universally ascribed to

* *Op. cit.*, s. 633. † Hufeland's Journal, xxi. s. 69, quoted by Hohl.

‡ Hufeland's Journal, 1815, November, s. 105. Bemerkungen über die bisher angenommenen Folgen des Sturzes der Kinder auf den Boden bei schnellen Geburten. Stuttgart, 1817.

it. He based this statement upon a series of reports collected throughout the whole country (of Würtemberg) from obstetricians, midwives, clergymen, &c., in which he considered that on the whole he had obtained only negative results. Klein's treatise, however, only proves how hazardous it is to decide as to the value of facts while prejudiced by a preconceived opinion, and how insufficient it is to view the facts themselves, not with our own eyes but with those of others. He has not hesitated to accept the statements not only of midwives, but even of clergymen and monthly nurses, though no unprejudiced person could suppose these people to possess the amount of knowledge requisite to constitute them judges in such a difficult scientific question; he has not hesitated to accept from obstetricians the reports of cases which had happened years, aye, tens of years previously, and which the reporters have related purely from memory, and he has not hesitated to base his criticism upon such a foundation. It is the less necessary to prove more in detail the untenableness of his criticism, because this has been already sufficiently done by Henke* and others. Moreover, Klein himself comes finally to the conclusion: that a fall on the floor in a precipitate birth *may* produce injurious and fatal consequences, but *does not necessarily do so*,—a conclusion which has never been disputed either previous to or since his publication. Klein has had no imitators, till quite recently Hohl† has come forward, and with most determined scepticism has sought to overthrow the whole doctrine of fatal injury to the child in cases of precipitate birth, and particularly of delivery in the erect posture. My own numerous experiments upon dead bodies lead me entirely to agree with him in his critique upon the experiments of Lecieux, the superficiality of which (*vide* note‡)

* Abhundl aus d. Geb. der ger. Med. 2 Aufl. Bd. iii., Leipzig, 1824, s. 3, &c.

† *Op. cit.*, s. 573 and 819.

‡ Lecieux, Renard, Laisné et Rieux, *Médecine legale ou considerations sur l'infanticide*, &c. Paris, 1819, p. 64. The experiments mentioned were as follow:—(1.) "Sometime after their birth, fifteen dead children were allowed to fall from a height of eighteen inches upon a stone floor (*sol carrelé*, the customary flooring of French houses); twelve of these had one, or sometimes both of their parietal bones fractured, either longitudinally or transversely. (2.) Fifteen children were allowed to fall thirty-six inches, and in twelve of these the parietal bone was found to be fractured, and in a few this fracture extended into the frontal bone. If the children were allowed to fall from a still greater height, the membranous connection of the cranial bones was found to be relaxed, even lacerated in some parts; often the appearance of the brain was altered, and in a few cases beneath the cerebral

makes them entirely worthless. "In these experiments," says Hohl, "the restraining influence exercised by the passage of the body through the genitals, by the umbilical cord, and also by the placenta, is wholly wanting. Moreover, in regard to the projecting force it must be remembered that a child born head-foremost, has already passed out of the uterus, and the extruding power of the latter does not come into consideration at all. The adjuvant bearing down alone of the parturient woman herself is what specially produces the extrusion of the body, but in general this ceases immediately on the birth of the head, and the parturient female must be induced to exert herself in this manner, if for any reason it is desired to hasten the birth of the body of the child. The power of these exertions is, however, to be rated at very little in the case of delivery in the erect posture. Yet when the child does come to the ground at birth, the parturient woman must either be standing, sitting, or squatting. The distance from the ground in such a kneeling or cowering posture appears to me, however, to be too small to permit of the production of fracture of the bones by such a fall, and no parturient female ever remains perfectly upright at the final moment of the birth of the child." In another place (p. 574) Hohl, founding upon his experience in the Lying-in Institution, states that there is no reason for supposing that a woman bringing forth in secret should expose herself to the pangs of labour in the upright position, since even at the last moment she has still time enough to lie down, or to squat—that, therefore, the statement of the accused, that she had given birth to the child in the erect posture must be regarded "as a pure fabrication,"—an important dogma for the public prosecutor, and one which, if it had any foundation, would at once completely upset the whole doctrine in regard to injury to the child by falling on the floor at its birth! But this statement is evidently the result of scientific obstetric theory, and not of medico-legal experience. How different is the position of a parturient female in a public lying-in institution, or in private practice, from that of a lonely and helpless woman, who, after carefully and anxiously concealing her pregnancy up to the last moment, is suddenly surprised by her labour while at work, or at night in her room,

membrane (? *meninge*), or in its substance (? *épaisseur de la meninge*), there was found an ecchymosis arising from the rupture of some vessel, and no fractures were found, only in the case of children with soft and very flexible cranial bones." This is a literal translation of the original passage referred to.

in a cellar, &c., and who, stoutly suppressing the earlier pangs, because she is still under observation, so soon as circumstances permit her, repairs to some lonely spot in a state of emotional and nervous excitement, which can only be thought of with compassion, because now the utter hopelessness of her future lies clear before her, knowing that she will be at once expelled from the house, and that she has nothing to expect from her seducer, &c., and in whom a general spasmodic state of excitement is accompanied by a veritable tetanic action of the uterus, which Wiegand has appropriately described as "an over-expulsive action of the uterus." I am no friend to that excess of philanthropy, in medico-legal affairs, which is the source of so many abuses by medical men, but under circumstances such as those described, which are of daily occurrence in actual life, common humanity would compel us to assume the possibility of the last moment of labour surprising the woman in every possible position, provided only experience had taught us that such cases did occur even in but a few rare instances. But these cases do actually occur, and that by no means in such scanty numbers, so that even cases of sudden delivery in the erect posture can by no means be wholly set aside as instances of "pure fabrication." In Case CCCLXXVIII., to be related presently, a maid-servant who had concealed her pregnancy, was *walking* upon the hard frozen road, laden with a heavy basket, when she was suddenly surprised by her labour, and the child shot from her *before the eyes of her mistress*, by whose side she was walking. In Case CCCLXXVII. the delivery also took place in the erect posture before the eyes of a witness. In another case, which was referred to me for decision by a foreign jury court, it was proved that the child was born while the accused was, as it were, suspended in the air. The usual position of her bed was somewhat elevated, so that she could not get into it without first stepping on a stool. After concealing her labour-pains for some time, and when she was about to lay herself down in bed to await delivery, as she stood with one foot upon the stool and the other upon the edge of the bed, the child shot from her and was fatally injured. All the circumstances of the case, the inquiries into the state of the locality, the examination of the child and of the mother, which had been most carefully carried out by the medical jurists, and finally, the subjective conditions of the case, which, however, did not affect our views, all were in favour of the truth of the statement made by the accused, who was consequently, and specially on

account of the opinion given by me, declared to be not guilty. This case also shows that purely theoretic reasonings as to the influence of the fall, taken from the measurement or estimation of its height, supposing the woman to be standing or kneeling, &c., upon the floor, are not sufficient for all possibilities. And the same was proved by another case, in which the child was born upon the seat of a privy, and shot from above into the cesspool, which contained hard frozen fæces.* Some years ago there came before me, as physician to a prison, the case of a prisoner who was prematurely delivered in her cell, before the eyes of her fellow-prisoner. The child was shot from her while she stood undressing, before the house-surgeon living in the house could be summoned. And I never shall forget a case, which occurred in my private practice at an earlier period; a married lady had come to Berlin, in order to be confined at her mother's, for the third time. She was suddenly seized with her labour while standing by the stove in the presence of her mother, and the child fell upon the carpet, without any injury to itself, however. After such experience, I am perfectly justified in accepting the general opinion, that A PARTURIENT FEMALE MAY BE SURPRISED BY THE LAST ACT OF BIRTH IN EVERY POSITION, EVEN WHEN ERECT, THAT THE CHILD MAY BE THUS FORCIBLY EXPELLED FROM HER GENITALS, AND MAY BE THEREBY INJURED, PARTICULARLY ON ITS HEAD, AND THAT EVEN FATALLY. As I have already stated, it has never been imagined that a child thus born is of necessity killed. Such a supposition is of course quite untenable. In the present state of the Prussian penal code, which fortunately no longer takes cognizance of degrees of lethality, it is quite superfluous to enter more at large upon this subject.

§ 115. CONTINUATION. — RESULTS OF PRECIPITATE BIRTH AND THEIR DIAGNOSIS.

The possible results of a child's falling to the ground at its birth are: Rupture of the umbilical cord, which, however, by no means always happens; premature separation of the placenta with its results; concussion of the brain, and particularly hyperæmia of and within the skull, or actual cerebral hæmorrhage; the first of these

* The circumstances of this case were deserving of attention in other respects. I have therefore not included it among cases of "Precipitate Birth." It nevertheless is another excellent example in regard to the height from which a child may fall. How often the truths of actual life ridicule the fancies of mere theorists!

occurs especially beneath the occipital aponeurosis, and upon or more rarely beneath the pericranium, the latter in the most various positions, even at the base of the brain; dislocation of the cervical vertebræ (? Ploucquet); finally, and more especially, fracture of the skull-bones. These fractures are commonly and almost exclusively confined to the parietal bones, one or both, and that chiefly in the region of the vertex, but they are by no means exclusively confined to the left one, as has been supposed *à priori*, because of the assumption that when the shoulders are in passing the child turns sideways, and that most commonly with the face to the mother's right thigh. Of course these fractures, once originated, may extend from the point of contact at the vertex into the frontal, occipital, or squamous portion of the temporal bone, and are found to do so. But it is always easy to perceive in such fractures a certain amount of radiation from a centre. When we find comminuted fractures of *several* bones simultaneously, such as both parietal, the frontal, and occipital bones, the supposition of their having been produced by the accidental fall of the child is all the less probable, inasmuch as from the elasticity of the skull-bones of newborn children no *contrecoup* can take place in them.

Of course, the fall of the child at its birth presupposes a precipitate delivery. This occurs also in those delivered secretly, of whom a large portion are certainly also *primiparæ*. The proof of this is to be found in the great number of children constantly found dead in a large town like Berlin, containing more than half-a-million of souls, the result of secret deliveries, which must therefore have been very rapid, if not actually precipitate, because, otherwise they could not have been concealed. Experience has, however, given me also another proof of the truth of this, namely, that very frequently the body of the newborn child is brought before us along with the placenta still connected with it. In accordance with this experience, we are indubitably justified in asserting that *those secretly delivered (even if primiparæ) may have a precipitate labour*, and therefore such a statement made by such a criminal at the bar is not at once to be set aside as a lying fabrication.

Where in such a case injuries, which have been proved by the dissection to exist, are declared to be the result of the fall of the child in consequence of precipitate delivery, the diagnosis may be very difficult; a simple ecchymosis, or bloody coagula beneath the occipital aponeurosis are of no value as proof of a blow on the head

in this manner, since it has already been pointed out (§ 109, p. 115, Vol. III.), that such appearances are daily found in the bodies of newborn children, whatever may have been the circumstances of their birth. In regard to this I must also warn against those extravasations and exudations of blood into or beneath the cellular tissue of the scalp—which are solely caused by the process of putrefaction—being taken for the results of mechanical violence, especially as produced by the fall of the child upon a hard floor, as thereby lamentable mistakes might be produced. Thus even an observer so accurate and experienced as Büttner (Case I., *loc. cit.*) assumed that the cause of the ecchymosis of the head of a child examined by him, did not depend upon the fall of the child at its birth, as asserted by the accused, but upon violence inflicted on it. Though the not very accurate description may be trusted, there is the greatest probability for supposing that this appearance was only the result of putrefaction—a matter which, eighty years ago, was neither so well known nor so much attended to as now.* A mistake of this character will not, however, be difficult to avoid, if it is remembered that such a putrefactive effusion of decomposed blood only occurs in bodies already far advanced in putrescence; and in such cases, unless there be other indicative appearances, it is better to refrain from answering the question, Has this child been injured by falling on the floor at its birth, or by other violence? It is extremely difficult to distinguish considerable ecchymoses or cerebral hæmorrhages, as well as fissures and fractures of the parietal bones, said to have been caused by the child falling on the floor at its birth, from similar accidents, the result of injury to the child in the birth, since the appearances on dissection are the same in both cases. Corroborative evidence may in such cases sometimes assist in arriving at the correct conclusion, for instance, the discovery of sawdust, gravel, plaster, lime, earth, or similar matters in the hair and on the head of the child, when it has fallen on a floor covered with the like. In doubtful cases I have again to recommend a prudent and negative construction of the opinion, such as, "The dissection has revealed no proof contrary to the supposition that the child during its birth,"—or, "that the child has had its head injured by falling on the floor at its birth, in the manner described," whereby at the same time

* The thorax, abdomen, and back of the body were "externally stained of a greenish-blue;" the cranial coverings "already swollen by air;" the brain was "already in a perfectly fluid condition."

the truth is expressed, and, as experience has taught me, the judicial object is efficiently attained. In regard to the most important query in each individual case of this character; whether the injuries on the head of the child, ascribed to a fall on the floor, are not rather the result of intentional violence inflicted after birth? experience has dictated the following line of conduct. Simple appearances, such as ecchymoses, simple fissures (fractures) of one or both parietal bones, without injury to the scalp, and without any other traces of injury upon the body of the child, speak for the great possibility of the truth of the statement of the accused in regard to the injuries having arisen from the fall of the child at its birth, and this may rise to certainty should other circumstances be ascertained in regard to the individual case corroborative of this assertion. Since experience teaches that actual infanticide, intentional murder of the child immediately after its birth, is always attended with *great barbarity and violence*, a fact which finds an evident explanation in the disposition of the mother, and her endeavour to attain her end with certainty. And accordingly, should this violence have been directed against the head of the child (which is by no means commonly the case, since suffocation, strangling and injuries with stabbing and cutting instruments are by far the most frequent causes of death in infanticide), much more severe and complicated injuries are found than those above-described as the usual results of the fall of the child on the floor at its birth, such as smashing and fracture of several different skull-bones, subaponeurotic isolated blood coagula on different parts of the scalp, laceration of the occipital aponeurosis and of the cerebral membranes, wounds of the brain, &c., and in general ecchymoses, and scratches on other parts of the body (p. 134, Vol. III.).

All authors have most justly recommended in doubtful cases of death of the child by a fall at its birth, to ascertain and take into consideration, the diameters of the head and shoulders of the child, the capacity and inclination of the maternal pelvis, the position of the vagina, the condition of the perineum, the whole circumstances of the birth, particularly in regard to the posture of the parturient female and the height from which the child was stated to have fallen, as well as the nature of the floor upon which it fell, as also whether this floor was hard, elastic, or perhaps pultaceous in consistence? Indubitably a knowledge of all these circumstances without exception is of the greatest importance for the medical jurist, who may think himself lucky when he can so ascertain them, as to be able to

base his opinion upon them. Among the limited population of a village or small town, where the life of each individual is as it were under the control of all his fellow-townsmen, this will happen often enough, but medical jurists in towns of any size, may at once resign all hope of obtaining any such corroborative proof! It has been forgotten in regard to this very good doctrine, that the pelvis of the mother can only be examined, when—we have the mother before us, who at the time of the dissection is usually wholly unknown; and that the nature of the floor can only be ascertained when we know where the birth has taken place, &c. In large populations, however, such cases occur in actual life after quite a different fashion. The body may be found anywhere and brought for examination. No one knows its origin; public proclamations are issued by the Judge presiding at the examination, in order to ascertain the mother, but in most instances these are in vain! The same thing may be said as to the umbilical cord. We are told to examine its length and how and where it has been divided. But, besides that these circumstances are not of particular importance—since cases will presently be related both of very long cords and of very short ones, both of cords which have been torn across, and of those which have been entire—it has again to be remarked that very often nothing at all can be ascertained in regard to the umbilical cord, when for instance it has been entirely torn out of the umbilicus, or when only the part attached to the child is to hand, and not also the placentar portion, of which the cases following afford examples. So that in actual practice the medical jurist is in general restricted to the appearances to be found in the body of the child, and I have already related how these are to be estimated in relation to this question. The following cases could not, in my opinion, have been decided otherwise than has been done.

§ 116. Illustrative Cases.

Case CCCLXXV.—Death from Hæmorrhage, Drowning, or Fall on the Floor at Birth?

The body of a male child was found in the water. It was twenty inches long, and weighed seven pounds. The diameters (of the head, three and a-half, four and a-half, and five inches; of the shoulders, five and a-half inches; and of the hips, three inches and one-quarter) were by no means small, and all the other appearances

rendered the maturity of the child indubitable. Its live-birth was also distinctly proved. No injury was found externally, particularly on the head. But beneath the occipital aponeurosis the whole region of the vertex was covered with an extravasation of blood one line thick, and there was a fracture of the right parietal bone running transversely from the sagittal suture in a straight line, one inch and a-half long, with sharp unecchymosed edges. The brain in this tolerably fresh body was already changed to a dirty red pultaceous mass, but on its surface and base a considerable amount of hyperæmia could be distinctly perceived. The cord was completely torn out of the umbilicus. In respect to a possible death from hæmorrhage, however, besides the cranial hyperæmia, there was a very great deal of blood in the liver, moderate congestion of the vena cava, and the lungs were of a beautiful rosy-red colour mottled with blue. Moreover, the lungs presented none of the symptoms betokening death from drowning. The trachea (and the stomach) was perfectly empty and pale, while the heart contained no blood. Accordingly death was not accounted for either by hæmorrhage or drowning, and we decided that the child had died from apoplexy. "which most probably owed its origin to a fall on the floor at birth." The mother was never ascertained.

Case CCCLXXVI.—Fall of the Child on the Floor at Birth.

In the middle of March the body of a newborn child, still attached to the placenta, was found lying in the streets. The maturity of this child could not be doubted (it weighed no less than eight pounds and three-quarters, and measured nineteen inches in length). The head was not small, though not proportionate to the weight of the child; its diameters were three, four, and five inches respectively, that of the shoulders five inches and three-quarters, and of the hips four inches. The umbilical cord entire, as has been said, measured thirty-two inches. The docimasia pulmonaris proved indubitably that the child had lived, and the cause of its death remained to be discovered. The body was very fresh, and displayed externally no trace of any injury, and particularly none upon the head. Close to one another upon the left parietal bone, and on the left side of the frontal bone, there were two extravasations of half-coagulated blood beneath the pericranium, each one line thick and about the size of a farthing.

There was another similar but smaller extravasation upon the occipital bone. The bones were uninjured, the vascular meninges and the sinuses were very full of blood; the dissection revealed nothing else of any consequence. Accordingly death must have resulted from cerebral hyperæmia, and in our summary opinion, after declaring the maturity and live-birth of the child, we went on to say that the death of the child had resulted from apoplexy, and in regard to the cause of this, "no other supposition seemed to be more probable than that the apoplexy had been produced by the child's falling on the floor at its birth, which (from the placenta having been extruded simultaneously with the child) must be regarded as having been very rapid." In this case also the mother was never discovered.

CASE CCCLXXVII.—DELIVERY IN THE ERECT POSTURE.—FALL OF THE CHILD ON THE FLOOR.

The fall in this case took place before an eye-witness. The mother, an unmarried *primiparous* factory girl, gave simultaneous birth to both placenta and child while *standing* at her work. Her fellow-workwoman immediately brought other females to her assistance, and the child was found to be dead. It weighed seven pounds, measured nineteen inches in length, and presented all the other signs of maturity. The docimasia pulmonaris proved that it must have breathed. Beneath the scalp we found upon the vertex an extravasation of coagulated blood one line thick; there was in this case also no injury to the bones, but apoplectic cerebral hyperæmia, as in the foregoing one. We did not learn whether the umbilical cord had been divided at the birth or subsequently; at the dissection it lay torn across and unbound. We declared that the results of the dissection completely confirmed the statement as to the circumstances of the delivery. The further investigation into the case as one of supposed infanticide was at once dropped, and even the mother was not brought before us for investigation.

CASE CCCLXXVIII.—DELIVERY IN THE ERECT POSTURE.—FALL OF THE CHILD IN THE STREET.

This case resembled the foregoing one in so far that the precipitate birth was in it also observed by a trustworthy eye-witness. The unmarried maid-servant, L., at the end of her concealed pregnancy,

accompanied her mistress in the evening to the Christmas fair, and followed her home, with a basket on her arm, heavyladen with purchases. On the road she was suddenly surprised by the birth, after having suffered and suppressed her labour-pains for about half-an-hour, and the child, as she afterwards said, "popped" out at once. There was much hard frozen snow lying on the street, and the child fell head-foremost on this, the umbilical cord being said to be torn across,—a statement certainly confirmed by the appearance of its edges. L. fell fainting in the street, but speedily came to herself again, and found the child dead, as was also seen to be the case by her mistress (who, alarmed, had run off for medical assistance) on her return. It had indubitably breathed after its birth, and had died from cerebral hæmorrhage, since, besides extensive congestion of the brain, we found one drachm of blood extravasated on the basis cranii. It was also interesting to find in this child a patch of defective ossification in the right parietal bone (*Vide* § 110.), in which there was a piece of bone about the size of a halfpenny, quite transparent, in the centre of which a fissure, one line in breadth, and with faintly serrated and ecchymosed edges, was visible. We decided that the child was mature, had been born alive, had died from apoplexy, and that "there was the highest probability for supposing that this apoplexy had been produced by the circumstances attendant on the birth, neither the dissection nor the documentary evidence giving any reason to suppose any other cause of death more probable."

Case CCCLXXIX.—Precipitate Birth.—Fall of the Child on the Floor.—Death of the Mother.

The results of the dissection in this case were very remarkable. Under circumstances unknown alike to me and to everyone else, a *primipara*, aged twenty-four, had secretly given birth to a child, and had died immediately after delivery, from hæmorrhage, as was proved by the medico-legal dissection. The body was brought before us wrapped in a sheet, in which also lay a placenta, already putrid; whether the deceased had been delivered in bed, which, from the appearances on the child, was not probable, or whether she had yet time after the birth and before her death to lay herself in bed, or whether she was laid there as a corpse by others, was not known. It was important to find a rupture of the perineum one inch in length, and the cord torn across five inches from the placenta, its edges corresponding

exactly with that portion of the cord still attached to the child; the whole length of the umbilical cord was thirteen and a-half inches. The child was twenty inches in length, weighed six pounds and a-half, but had a small head, its diameters measuring respectively three inches and one-quarter, three inches and three-quarters, and four inches and one-half. The diameter of the shoulders was only four inches and one-half, and that of the hips three inches and one-quarter. Beneath the scalp there was a layer of dark coagulated blood one line thick. The right parietal bone displayed a transverse fracture three inches long, and the squamous portion of the right temporal bone had a similar fracture one inch in length. The entire brain was in this case remarkably enough enclosed in a layer of very dark coagulated blood. Externally there was not a trace of injury, neither on the head, neck, nor on any other part of the body. The docimasia pulmonaris proved that the child had lived after its birth. The very extraordinary appearances found on dissecting this body, so different from what is usual, were sufficient to enjoin prudence. We did not feel justified in saying more than what follows: that the fatal apoplexy had been produced by external violence; that the nature of this violence had not been revealed by the dissection; that it was however possible that the death of the child might have been caused by its falling on the floor from precipitate birth." Since the mother was dead, the case was not further followed out, and we were not even required to inspect the locality of the delivery.

Case CCCLXXX.—Death of the Child from a Fall at its Birth, or Infanticide?

The following was another example of those cases in which, when the medical jurist is necessitated, under dubious circumstances, to give an opinion fraught with important consequences, he is greatly comforted to find his opinion justified and confirmed by the subsequent confession of the accused. The body of a newborn female child was found stuffed into the ash-heap in the kitchen of a house. The mother was discovered, after the dissection, to be a servant in the house, who four years previously had given birth to a mature child still alive. The body, completely covered with ashes, was that of a child nearly mature, seventeen inches and a-half long, six pounds in weight, with such relatively small diameters as readily to permit the assumption of a precipitate birth, namely, of the head

three and one-quarter, four, and four and three-quarter inches; of the shoulders four inches; and of the hips three inches. The umbilical cord was nine inches and a-half long, and from its edges seemed to have been torn across; the placenta, which was found previous to the discovery of the child, was probably born simultaneously with it. There was here also no trace of injury visible externally, particularly on the head. The child had indubitably lived. The whole of the right half of the inner side of the occipital aponeurosis was covered with a layer of coagulum one line thick. A similar extravasation, about the size of a shilling, lay over the pericranium upon the vertex. The right parietal bone was fractured longitudinally and transversely, the right side of the frontal bone transversely, the left parietal bone longitudinally in two different places, and also transversely; and finally, the occipital bone was fissured and fractured throughout its whole length. The entire brain was everywhere hyperæmic, and in the hollows of the basis cranii we found isolated extravasation of dark coagulated blood each one line thick. The age, live-birth, and cause of the child's death, were easily discovered. In accordance with the principles we have already laid down, we had no hesitation in declaring, in our summary opinion, after the dissection, that these fatal cranial injuries had not been produced by the fall of the child at its birth, but by violence which must have been inflicted on the head of the child after its birth. The mother, who was soon afterwards discovered, after a primary denial, confessed at repeated examinations, that she (five days before the dissection) was surprised by her labour while standing at the fireplace, which was paved with stone. The child was suddenly expelled, and fell head-foremost on the floor. After a short fainting fit she revived, and intending to kill both herself and the child, she seized it and "struck its head several times upon the stone hearth," subsequently concealing the body. She was condemned by the jury court to six years' penal servitude.

Case CCCLXXXI.—Fœtus taken out of a Cesspool.—Death by fall of the Child at its Birth.

This was another case of birth simultaneous with the placenta, but in different circumstances from those of the foregoing cases. A newborn female child was found in a cesspool rolled in rags right beneath the seat. The child, without the placenta, weighed eight pounds and a-half; it was twenty inches long, and its cranial diameters were, three inches

and one-quarter, four inches and one-quarter, and five inches, and the diameter of the shoulders was of the very considerable breadth of five inches and one-half. All the other appearances were in favour of the maturity of the child, which must also have respired after its birth. Beneath the occipital aponeurosis we found a blood coagulum one line thick extending from the left temporal bone to the left frontal bone, and beneath the periosteum at this part there were several isolated ecchymoses. The bones were all uninjured. The cerebral veins and sinuses, however, displayed a considerable amount of hyperæmia, which was the only cause of death that could be discovered in the child. The fact of the child being rolled in rags proved that it could not have been born over the cesspool, but must have been thrown in after its birth; and this consideration, together with the simultaneous expulsion of the placenta, which made it probable that the birth had been precipitate, as well as the other appearances on and in the body of the child, made us assume that there was "the highest probability" that the fatal apoplexy had been caused by the fall of the child upon a hard floor at its birth. All inquiries after the mother proved fruitless.

CASE CCCLXXXII.—CHILD TAKEN OUT OF A NIGHT-CHAIR.—DEATH BY FALL AT ITS BIRTH.—THE BODY MADE AWAY WITH FOR ECONOMICAL REASONS.

The body of a mature newborn boy was found in a night-chair, along with a placenta weighing eleven ounces; the child weighed six pounds and a-half, and was eighteen inches in length; but the diameter of the head and shoulders were small (three, four, and four and a-half inches for the head, and four inches and a-quarter for the shoulders). The portion of the umbilical cord attached to the child was fourteen inches long, torn across with ragged edges, and tied. Beneath the pericranium, on the left parietal bone, there were a few isolated ecchymoses; no other trace of violence was to be found, either externally or internally, upon the body, which was perfectly fresh. Death had been caused by cerebral hyperæmia, not by suffocation. Respiratory life was indubitable. The placenta being found along with the child, the torn umbilical cord, the small diameters of the head and shoulders, and the secret delivery, were all in favour of the supposition of a precipitate birth; and the ecchymoses on the parietal bone made it also probable that the child had fallen on its head at its birth. A fall could not, however,

have had this effect if the birth had taken place upon the night-chair, and the child had fallen upon the soft semifluid (in May) mass of excrement; and in this case also death would have been caused by suffocation, and not by cerebral hyperæmia. Accordingly it was to be supposed that this viable and live-born child had died soon after its birth from cerebral apoplexy, produced by falling upon some hard floor at its birth, and that after its death it had been flung into the night-chair in order to save the expense of burial and more completely to conceal its birth. The case was not further followed judicially.

Case CCCLXXXIII.—Death by a fall at Birth? By Suffocation in Ashes? or by Drowning in a Privy?

One night in January, L., secretly pregnant for the first time, left her bed on account of the violence of her pains, and stood beside the stove, when, along with the most vehement pain, she suddenly felt "the child fall out of her private parts." She heard only "a dull thud and a single cry from the child." When she came to herself again, she found the child dead, and her next thought was how to get rid of it. She rolled it up in a pillowcase, carried it down to the court, and "dropt it into the privy." Next day a whitish packet was seen in the privy covered with ashes, upon which lay human excrement. This packet was taken out with a dungfork, and the child was discovered. The pit was half-filled with "dung and rubbish;" the excrement in it was not frozen. The child was a mature female, and was proved by the docimasia pulmonaris to have lived. Its whole body was thickly strewn with ashes, none, however, had entered the nostrils, mouth, or pharynx. The umbilical cord had uneven, ragged edges. The stomach was empty, in particular it contained neither ashes nor human excrement, and the vena cava contained very little blood. The trachea and its divisions were perfectly empty, pale, and normal. The lungs on being incised gave vent to bloody froth. The heart contained only a few drops of blood in its right cavities. The œsophagus was also perfectly empty. The internal surface of the occipital aponeurosis had a few isolated blood coagula, each one line thick, upon the region of the vertex and occiput; there was an obtuse angled fracture two inches long in the left parietal bone, which extended for half-an-inch towards the right parietal bone; parallel with this fracture there was also a depression of the left parietal

bone half-an-inch in length, which likewise extended towards the right parietal bone. One-quarter of an inch from this fracture there was in the right parietal bone a similar fracture only one-third of an inch in length. The cranial bones were unusually thin at the situation of the fractures. The cerebral membranes were only moderately congested, and the sinuses almost empty; on the other hand, at the base of the right cerebral hemisphere there was an extravasation of dark coagulated blood the size of a bean. All the other skull-bones were uninjured. The child, therefore, had died from apoplexy. The position of the fractures, the extreme thinness of the parietal bone around these fractures, which obviously had their centre of radiation in the left parietal bone, induced us at the time of the dissection, without any previous knowledge of the circumstances attending the birth, to assume that they had been caused by the fall of the child at its birth, and this was confirmed by the subsequent confession of the mother, and by the blood-stains on the floor of the room. The trifling character of these cranial injuries were opposed to the idea of any violence having been otherwise inflicted on the child, particularly by the mother; neither could they be regarded as having been produced on the dead body by the dungfork, because not only did the bones display traces of vital reaction, but the soft parts were also perfectly uninjured. Neither could these injuries have been produced by the fall of the child into the privy, because this contained no hard substance, not even frozen human excrement. The child, consequently, had died from apoplexy produced by falling on the floor at its birth, and, since not one symptom of suffocation was found, it must have been already dead when it was thrown into the privy, and could not have died from suffocation produced either in this way or by means of the ashes.

CASE CCCLXXXIV.—DEATH BY A FALL AT BIRTH, OR INFANTICIDE?

An unmarried woman, who had most persistently denied to the last her very visible pregnancy both to her mistress and fellow-servants, was delivered in May, either, as she at first asserted, in bed, at the foot of which there was in the room a beam supported by an iron pillar, or, as she subsequently stated, "the child suddenly fell from her genitals," after a violent pain as she was returning from the court to her room. The child, stated to have been born dead, was dissected three days subsequently. It was a mature female child,

and the docimasia pulmonaris proved that it had indubitably lived. The pericranium and the cerebral membranes were much congested, and about six drachms (imp.) of blood were effused over the surface of the brain. The cause of this fatal extravasation was found to be fracture of both the parietal bones. In our written opinion we state: "Both of these bones were by no means so completely ossified as they usually are, but displayed many thin transparent patches in which were visible openings with serrated edges, just as is often seen in cases of defective ossification in the skulls of newborn children. But fractures were found in *both* of the parietal bones, and in both of them *quite independent* of these congenital defects. The fact of both sides of the head being injured in *this manner* renders it in the highest degree probable that these fractures have not been caused by the child falling with its head on a hard floor at its birth, as stated by the accused, since in such a case, for evident reasons, one or more fractures or fissures are found in one bone, at that particular spot, generally of one parietal bone, on which the head was struck at its fall. We do not require, however, to state, that if the accused was delivered in bed, as she stated at her first examination, the idea of such a fall could not for one instant be entertained. There are, however, other appearances corroborative of our supposition that these fractures of the skull were most probably not caused by a fall at birth, but by some other external violence. We refer to the dark, livid crescentic stain, three quarters of an inch in length, right under the lower lip, and the blackish-red colour of both of the child's lips. The stain referred to exactly resembles the mark upon the body of the impress of a finger made shortly before death. It therefore appears probable that the accused has compressed with her hand the mouth of her child just born in order to prevent it crying, and the impression visible on the body proves that this has been done with no gentle hand. Such a manipulation of the head of a child like this, with skull-bones partially quite thin and unossified, compression in such a case with one or with both hands, might very readily originate the fractures found, while it is just as likely that any other violence inflicted on the child's head may have caused these injuries, as we have observed in similar cases. Mere unintentional self-assistance at the birth cannot be regarded as a probable cause of these injuries, since in a case of rapid birth there is no need for any such self-assistance, and it would, moreover, have been otherwise made known by other appearances, such as scratches, none of which have been found in

this case." Accordingly we decided—1. That the child was mature and viable; 2. That it had lived during and after its birth; 3. That it had died from cerebral hæmorrhage, the result of injuries; 4. That it was extremely probable that these injuries had not arisen from the fall of the child at its birth, but from violence inflicted in some other manner; 5. That in regard to the nature of this violence no conclusions can be drawn from the dissection; 6. That it is, however, improbable that this violence has been inflicted by the self-assistance of the parturient woman during the act of birth.*

§ 117.—Continuation.—(*b*) Hæmorrhage from the Umbilical Cord.

Can a newborn child suffer a fatal hæmorrhage from the umbilical vessels?

The earlier writers assumed too much when, from the ascertained facts of life after birth, and an untied cord on the body, they concluded that death had in this way occurred from hæmorrhage. But it is just as unjustifiable to deduce the impossibility of death from hæmorrhage in this manner, for the well-known theoretical reason, that the pulmonary circulation is established after birth. Unprejudiced observation shows that death *may* occur in this manner, but that it very seldom does so even in circumstances apparently most favourable to it. In my own long-continued medico-legal experience, which has seldom been exceeded in extent, I have never observed one single case of this character, though I have seen no fewer than six cases in which the cord was found to be divided close to the umbilicus, and cases in which the portion of cord left untied on the body has been one, one and a-half, and two inches in length, in some of which it has been cut, and in others torn across, yet without the occurrence of death from hæmorrhage, are cases of daily occurrence. And very naturally it is so, since, as a general rule, the funis is not tied in cases of secret birth, and every medical jurist has in regard to the dissections of newborn children almost in every instance to deal with fœtuses born in secret. Since, however, it is of more importance for the Judge in each individual case to know whether a child *has* died from hæmorrhage in this manner, than to know whether it *can* do so, of course, for logical reasons, the fact of death from hæmorrhage must in every case be first ascertained. This,

* *Vide* also Cases CCCXC.-CCCXCVI.

however, presents no diagnostic symptoms in newborn children different from those in every other age, and I beg, therefore, to refer to § 21, Spec. Div. (p. 2, Vol. II). Whether the fatal hæmorrhage has occurred from injuries or from the umbilical cord, general anæmia is the most important appearance in all newborn children who have bled to death; but in newborn children, as well as in adults, the cerebral veins from hypostasis appear to take no part in this bloodlessness, and we also find external hypostases (post-mortem stains) as well as other internal hypostases, particularly of the lungs, which, moreover, in cases of death from hæmorrhage, have their upper surface of an extremely characteristic pale-grey, mottled with blackish-blue, and on being incised appear to contain only air, and not one drop of blood (*vid. loc. cit.*). But in regard to newborn children, which are more easily got rid of than the bodies of adults, and often lie a long time before they are accidentally discovered, I have to repeat the warning, the necessity for which is strongly enforced by a perusal of the earlier authors, not to mistake that anæmia which is merely the product of putrescence for anæmia from fatal hæmorrhage. In dubious cases, therefore, where putrefaction has already advanced so far that the colour of the skin and the internal organs can be no longer ascertained, and the existing anæmia is to be ascribed to evaporation of the blood, the medical jurist must refrain from giving any opinion as to the fact of the occurrence of death from hæmorrhage. The error of the earlier writers, who supposed that hæmorrhage from the umbilical cord gave rise to a combined death from suffocation and from hæmorrhage, requires no refutation. The simplest criticism of any of the cases quoted in proof of this will show at once that the children have not bled from the funis.

§ 118. Continuation.—Diagnosis.

If in any given case death from hæmorrhage has been determined, it yet remains to be ascertained, whether it has arisen from the umbilical cord or no. The probability of this will approach to certainty when no other injury, not even of the slightest character, is found upon the body; but even in such a case we must reflect on the possibility of fatal hæmorrhage from internal pathological causes, which I myself have twice observed to have taken place from the rectum. Consequently we must investigate whether those conditions exist in the body which experience teaches us favour hæmorrhage from the

funis, or the reverse. A mere staining of the body or the coverings in which it has been found with dried blood can, of course, prove nothing, since this may arise from the delivery itself, or from an umbilical hæmorrhage that has not been fatal, while, on the other hand, actual blood-stains on the body may be washed off either intentionally or accidentally by the water into which it has been thrown. In regard, however, to the conditions mentioned general experience is, unanimous in permitting no doubt to rest upon them:—1. The umbilical cord must be separated between the umbilicus and placenta. Mende's opinion,* that there is no reason for any such necessity, since the length of the cord does not hinder the passage of the blood which is continually taken up by the placenta as it flows thither, though supported by the evidence derived from injections, is not proved by any actual experience and is even theoretically very doubtful. 2. The fact that the part of the cord left on the body has not been tied may indeed make the case probable, but can of course of itself prove nothing (always presupposing that death from hæmorrhage has been ascertained). For the ligature which may have been originally present, may have been accidentally removed during the transport or unclothing of the body, or it may have been washed away in the water in which the body has been found, &c. It is also supposable, however improbable, that a ligature has for some reason or other been applied after the death of the child, not having been so previously. 3. The sooner the unbound funis has been divided after the commencement of respiratory life, the more readily will hæmorrhage from the umbilical arteries occur, and the reverse. The dissection will certainly only in unusual circumstances be able to determine the duration of the respiratory life, since the docimasia pulmonaris will prove but a short life in any case. Moreover, an observation of Hohl's† gives a very remarkable proof that fatal hæmorrhage may take place from the umbilical cord even after a life of many hours' duration. About midday a midwife tied before his eyes a very gelatinous cord, firm and sure; she stated that she found all right in the evening; the mother herself, about midnight, laid the child dry and remarked nothing unusual; next morning the child was found dead, and at the dissection it was seen to be bloodless and healthy. 4. The separation of the portion of cord left on the child must be as close to the navel as possible. The shorter it is, the more easily does hæmorrhage occur, the longer it is the more easily will

* Handb. der ger. Med. iii. s. 279. † *Op. cit.*, 588.

fatal hæmorrhage be prevented by the retraction of the arteries. Therefore the danger of hæmorrhage is greatest when the umbilical cord is divided close to the umbilicus. Nevertheless, I have observed four such cases (CCCLXXI., CCCLXXV., CCCLXXXVI., CCCLXXXVII.) without any fatal hæmorrhage; in the other two cases previously referred to the children were born dead. 5. The mode in which the division has been effected is not without its influence in regard to the danger of the hæmorrhage, as I, although without any personal experience, must, nevertheless, assume to be correct in accordance with those generally adopted theoretical reasons, which are in themselves correct. The danger is therefore greater, when the funis is divided with a sharp implement, cut, than when it is torn across, as in the latter case the arteries are necessarily compressed. In regard to the question whether the *umbilical cord can be spontaneously ruptured (at birth)*; or whether any such statement on the part of the accused should not be at once rejected? Negrier, in Angers (subsequently Speth also), instituted experiments in which he proved the strength of the cord by suspending weights on it.* These experiments, however, prove nothing, since they produced only a gradual extension of the cord, whilst the rupture at birth is produced by a sudden jerk; they prove nothing, because the force exerted by the child in falling is not taken into consideration; chiefly, however, they prove nothing, because they were made upon dead umbilical cords, and the resistance of a dead organ is perfectly different from the same while alive. I have already related my own very convincing experiments in regard to this (§ 6, Special Division, p. 244, Vol. I.), and I supplement them here by the results of very numerous experiments made upon perfectly fresh umbilical cords. When such a cord is simply attempted to be torn by the hands alone, this attempt is often unsuccessful, because the smooth and slippery cord glides through the hands; but this can be prevented either by twisting it round the hands, or by holding it with a dry towel; but I can safely assert that even with such preparation, and by employing a sudden and powerful jerk, it is extremely difficult to tear an umbilical cord across, and this is only possible by means of rapidly repeated violent jerks. This experiment may be repeated by anyone on the first best cord he falls in with (and he will always obtain a similar result). But the cords with which we experimented were

* Annales d'Hygiène, publ. Vol. xxv. p. 126. Transl. in Henke's Zeitschr., Bd. xliii. s. 182, &c.

dead, and had been so on the average for two or three days at least! the cord at birth is still alive, and living organs have very much less power of resistance than dead ones, as all our experiments have indubitably proved. Since now fatal hæmorrhage is more likely to take place when the funis is cut than when it is torn at the birth, whether spontaneously or intentionally, it becomes a question, whether we can ascertain on the body of a child which has bled to death the nature of the division which has been made, so as to be able to draw conclusions from it? The immense importance of the answer on the part of the medical jurists, to the question, whether the cord has been torn or cut, and how even the life of an accused party may depend upon it, is proved by the following case, which is more interesting in a criminal than in a medico-legal point of view, and which occurred while the former penal code was still in force, by which the crime of infanticide was punishable with death.

CASE CCCLXXXV.—INJURY OF THE CAROTID ARTERY AND SPINAL CORD OF A NEWBORN CHILD.—DOUBTFUL NATURE OF THE MODE IN WHICH THE UMBILICAL CORD HAD BEEN DIVIDED.

An unmarried maidservant, pregnant for the second time, brought forth her child secretly in a cellar during the night, and first killed the child by repeated stabs with a table-knife, and subsequently inflicted many external injuries on it while dying with a spade, with which she buried it in the sand. The right carotid was punctured within the thorax by one stab, another completely severed the spine and spinal cord between the fifth and sixth cervical vertebræ. The medico-legal decision of the case was consequently easy. On the other hand, the following circumstance shows how important it is to proceed with the utmost carefulness in making a legal dissection. The accused stated, that after the child was born, and while it was still connected with her by means of the funis, she went into the adjoining room to fetch a table-knife with which to cut the umbilical cord, and that she *then for the first time*, with the knife in her hand, and overwhelmed with fear and terror, was suddenly seized with the idea of killing her child, which she carried out. This view reduced her crime in the eyes of the criminal jurist to a mere act of homicide. Of course, at the dissection of the body, when no one could guess the subsequent confession, the condition of the edges of the remains of the umbilical cord had been carefully examined by us,

and we had ascertained indubitably from the irregular, serrated, and denticulated edges, that the umbilical cord had not been severed by a sharp instrument, but had been torn across. The instrument employed by the murderess, and subsequently recognised as such by her, was *a very sharp knife*, she herself having sharpened it but the day before along with the other knives of the house, therefore, we were forced to maintain our original supposition in spite of this statement of the accused. Her crime thus regarded was "Murder;" for it was indubitable, that she had not fetched the knife to divide the umbilical cord, but to kill the child after the cord had been severed, involving premeditation in the eyes of the Judge. As the state of mind of the accused at the time was not quite free from doubt, she was only condemned to the unusual punishment of many years imprisonment.

The general idea that the edges of an umbilical cord are clean and smooth when it has been cut, and serrated, uneven, denticulated and irregular when it has been torn, is perfectly correct. But when a blunt knife has been used to divide it, and the cord has been as it were sawn across, and half-torn, then it may be very difficult at the time of the dissection to decide as to the mode in which it has been divided, and I beg of all conscientious medical jurists not to cast a stone at the accused, when in any case of this kind they are unable to state a certainty; and I trust I shall have by these remarks made less experienced medical jurists aware of the necessity of caution. When the umbilical cord is already mummified we must soften its end in cold or (that we may better and more quickly to attain our end) in warm water, in order to examine the condition of its edges. 6. The constitution of the child is also not without its influence on the greater or less danger of hæmorrhage; *cæteris paribus* powerful and full-blooded children more easily bleed to death than those that are anæmic, which faint after a very trifling loss of blood, and thus give time for rescue, supposing such assistance is, from the circumstances of the case, possible. 7. Finally, as to the condition of the cord itself, I may give the statement of Hohl, as that of an experienced obstetrician, that fatal hæmorrhage is more apt to occur from thick umbilical cords than from thin and small ones.* I myself have had no experience in this matter. True and false knots upon the cord present no positive obstruction to the possibility of death from hæmorrhage.

* *Op. cit.*, s. 588.

§ 119. Illustrative Cases.

Case CCCLXXXVI.—Funis divided close to the Umbilicus. —No Hæmorrhage.

An unmarried maidservant, who had concealed both her pregnancy and delivery, was seized with precipitate labour on the 5th of May, 18—. She stated, that on awakening from a swoon she found the child dead beside her. Two days subsequently the body was found stuffed into a pail. The child was indubitably mature, and had just as indubitably breathed. As interesting points of the docimasia pulmonaris, I may mention, that the lungs were not pale but of a beautiful flesh-red, and distinctly emitted bloody froth on being incised. The cord was cut off so close to the umbilicus, that at first sight it seemed as if the umbilicus was cicatrized. In the abdomen, particularly in the liver, spleen, and vena cava, there was a moderate amount of blood; the urinary bladder was empty, the large intestine distended. The heart contained no blood. Within the cranium, however, there was a distinct hyperæmia (not hypostasis), the skull-bones deeply stained; the veins of the pia mater and the sinuses apparently much congested if not immoderately so. There was nothing else anormal. The absence of any cranial swelling, and the fact of the placenta being produced along with the child permitted us to assume, that the delivery had been precipitate.

Case CCCLXXXVII.—Funis torn out of the Umbilicus.— No Hæmorrhage.

The body of this mature newborn male child was already (in July) far advanced in putrescence and covered with maggots, yet the docimasia pulmonaris could still be instituted, and the putrefaction did not prevent us from ascertaining that death had not occurred from hæmorrhage. The cord was completely torn out of the umbilicus. Nevertheless, not only did the brownish-red lungs contain much bloody froth, and the vena cava much blood, but we also found such distinct evidence of hyperæmia within the skull that we were forced to conclude that the child had died from apoplexy, and in answer to a direct query could say, that the fact of the cord's being torn out of the umbilicus had not the slightest connection with the cause of death.

Case CCCLXXXVIII. — The Funis not tied. — No Hæmorrhage.

This (mature) child had also not bled to death from rupture of the cord, five inches of which were still attached to its body, but it too had died from cerebral hyperæmia after it had breathed. The body was found carefully rolled up and packed in a box, and along with it lay the placenta which weighed about one pound (imp.), *the average weight of the placenta* in mature children; fifteen inches and one-half of cord were attached to it. The lungs were of a mottled brownish-red, floated, &c. I have forgotten to note the amount of blood in the abdomen; on the other hand, I find mentioned among my notes "distinct apoplectic hyperæmia," and a record of the summary opinion, to the effect that the child was mature, had lived subsequent to birth, and had died from apoplexy, for which there was no evident reason.

This case of five inches of cord being left untied without any hæmorrhage occurring, I only give as an example of those cases that come before us every day, as I have already mentioned, and in proof of which the history of most of the dissections made by us of newborn children might be given, which would be alike wearisome and superfluous.

§ 120. Is the Mother Guilty, or not Guilty?

Besides the various kinds of death peculiar to children in and shortly after birth, the newborn child may also die after a brief life from one of the many various causes of so-called unnatural death (§ 107), only those kinds of death are, however, particularly interesting for us as medical jurists, in which, as in those already described, the culpability of the mother may be doubtful; this culpability is unquestionable in all such cases as when the child has died from incised wounds, from poisoning with sulphuric acid, drowning, stuffing of its mouth with foreign bodies, &c., presupposing that no third person is implicated; but the guilty intent of the mother alone with her newborn child may be questionable when, from the examination of the body, it appears that the child has died from any of those peculiar causes already described, or that it has been suffocated in bed, between the thighs of its mother, or by being born into excrement, or that it has been left lying in the cold so long as to die therefrom, or

that the want of the performance of any of those first and necessary duties has proved fatal to it. All medico-legal experience in criminal matters teaches us that in this respect the person accused, just as explicably as pardonably, brings forward the most daring lies to prove herself innocent, and even the silliest maid becomes more or less logical, because she knows, that as no witness can be brought against her, consistent lying alone may save her. But in this, as in everything else, the medical jurist must neither on the one hand yield to the dictates of humanity alone, nor on the other, shut his ear altogether to those lessons which experience indubitably teaches. In this respect I have in the foregoing paragraphs pointed out by means of facts which, as well as those recorded by other observers during past centuries, have long been generally recognised as such, except by a few isolated opponents, that *precipitate birth* may and does often occur even in those bringing forth in secret and for the first time, and that in every possible posture, even in the erect one. Hence arises the possibility that, without any ciminal intent having ever entered the mind either during the continuance of pregnancy or at the moment of birth itself, the child may in a case of sudden delivery be fatally injured on the head, may be strangled by a noose of the umbilical cord, or may even bleed to death from the rupture of the cord. It is just as indubitable also, as has been proved by observations perfectly free from suspicion, even in the case of married women, that *an urgent desire to pass urine and fæces* may force the parturient female during her final pangs *bonâ fide* to the privy or the nightchair, and that the child may thus be suddenly expelled into a mass of excrement and therein suffocated. Not less well-known, both to us and to our predecessors, is the fact of *birth sometimes taking place during a state of unconsciousness*, with all those momentous consequences that may result therefrom in regard to the life and death of the child. In the same category with this may be placed a complete *ignorance* of the parturient female in regard to the act of delivery and the assistance necessary for a newborn child. No exculpatory plea is more frequently brought forward by the culprit at the bar than this, but in general it can only be allowed in the case of very young *primiparæ* still to some extent moral and uncorrupted. In close connection with this there is another exculpatory circumstance, the estimation of which is easier than that just mentioned, since this may be based upon appearances found at the dissection, I refer to injuries said to have been inflicted by attempts at *self-*

delivery. These attempts at self-delivery are by no means of infrequent occurrence, and consist chiefly in seizing the head and neck of the child and dragging them outwards, when by any chance the delivery is delayed after the birth of the head. The visible evidence of this self-delivery consists of scratches and nail-marks upon the face or neck, precisely such as the events of daily life make every one acquainted with. *Severer injuries* to the child, such as fractures of the larynx and cranial bones, are *never produced in this way*, since they require a much greater effort of violence for their production than can be thus exerted, always excepting, however, cases of defective ossification of the cranial bones, in which a very trifling amount of compression (even that of self-delivery) is sufficient to effect a fracture (*Vide* Case CCCLXXXIV.). On the other hand, it cannot be denied that it is possible for one of the cervical vertebræ to become dislocated from the violent efforts to which the parturient female is impelled, alike by the violence of her pains and of her mental emotion, though I have never seen nor heard of such a case. And it can just as little be denied that the child may be suffocated by these attempts at self-delivery, and without any criminal intent whatever, though such cases are certainly of very rare occurrence. The decision of such a case may be extremely difficult, since the appearances on the body in cases occurring under circumstances of *bonâ fide* self-delivery are precisely the same as those observed in cases of criminal intent, and the individual case itself, with all its circumstantialities, must afford the data on which to base an opinion. Thus, for instance, a man would not err in ascribing the appearance of nail-scratches on the head, face, or neck of a child's body, without any trace of any other injury, or of a violent death, to attempts at self-delivery, and the same appearance, if discovered along with other indubitable proof of violence and of death produced thereby, would only prove this all the more (Case CCCXC.)—In regard to *injuries* found upon the body, and the tendency to scent a crime, which may never have been committed, in the case of every newborn child found dead, and by means of a medico-legal opinion to cause the arrest and precognition of a party perhaps perfectly innocent, it would perhaps be as well to refer to some points which have been already treated of in a previous portion of this work. I commence by repeating the warning (§ 109, p. 116, Vol. III.) not to mistake the common subaponeurotic blood-coagulum on the child's head, which is merely the result of the act of delivery, for the result of violence; and I also again warn not to mistake the

very natural-like pseudo-mark of the cord, so often seen in very fat children, particularly in winter, and which has been already (§ 112, p. 128, Vol. III.) correctly described, for the mark left by the cord in a case of actual strangulation; further, as in all bodies, so also in those of newborn children, injuries may be received when in the act of dying, or even after death, by falls, blows, dragging about, &c., of which visible traces may be left on the body (*Vide* § 33, Gen. Div. *sub* 2 and 4, pp. 117 and 124, Vol. I.), as also of the action of blunt and pointed instruments which may be employed to lift, fish, or drag out the bodies, the effects of which are often seen on the bodies of newborn children which are so often hid away in holes, corners and pits of every kind, out of which they can only be extracted by means of instruments. Finally, it is particularly in the case of newborn children, which in other cases are concealed in dung-pits, privies, water, either running or standing, &c., that we find such injuries, manglings and gnawings by water-rats, swine, and dogs, &c., as have been already described (§ 33, Gen. Div., p. 140, Vol. I.) as of frequent occurrence, and by reason of which whole limbs of the body are often found to be mutilated or entirely defective.

It is true that the answer to the question of guilty, or not guilty (in this case of the mother accused) lies with the jury and not with the medical jurist; but to the latter belongs the duty of preparing the case for the decision of the jury by a scientific unravelling of its facts, and guiding their opinion where its objective facts may seem to be doubtful. An accurate and careful estimation of all the circumstances here related as derived from experience, and a prudent avoidance of all misplaced and false humanity on the one hand, and of all fanciful suspicions of crime upon the other, will certainly enable the medical jurist to attain the end desired. It is not possible to lay down any other rules of general application. The peculiar circumstances of each particular case in their entirety must decide the matter, as the selected examples following may suffice to show. I have also intentionally included amongst these a few cases (CCCLXXXII., CCCLXXXVII., CCCLXXXIX., and CCCXCIX.), the special circumstances attending which must force the conviction that the peculiar mode of disposal of the fœtus arose solely from economical grounds, namely, to save the heavy expenses of burial, and this is of frequent occurrence in Berlin; or to carry out after death that concealment of an illegitimate birth, which

had been successfully practised during the short life of the child.

I need scarcely remark that the question of the guilt or innocence of the mother, or of those circumstances that may mitigate the former, depend very materially upon the mental condition of the parturient female, and upon her responsibility at the time of the birth; but this portion of the subject will be entered on more at large in the sixth part of the Biological Division of this work.

§ 121. Illustrative Cases.

Case CCCLXXXIX.—Exposure of the Child the Suspected Cause of its Death.

The unmarried mother of a mature, living, and viable, though somewhat feeble, female child, had wrapped it up immediately after its birth, on the 28th of July, in linen cloth, and laid in a press on the floor of the house, where it was allowed to remain for ten hours (*Vide* Case CCCLXXIV). When taken out the surgeon, R., found a piece of the umbilical cord nine inches long and not tied attached to the child, which was healthy and lively. It was taken to the Charity Hospital, and subsequently brought to the mother in prison, where it received all necessary attention; nevertheless it died in prison a few weeks after, according to the certificate of the physician, of "Debility,—asthenia." Nevertheless, we were asked whether the exposure of the child, as proved by the documentary evidence, had not been productive of injurious consequences to it, and proved the more or less proximate cause of its death? It was made out that the child could not have bled from the unbound funis while lying in the press, since this was of the very considerable length of nine inches, and the child was feeble, &c. (*Vide* p. 149, Vol. III.) It was also easy to set aside the supposition that the child had died from the absence of atmospheric warmth while exposed almost naked—in July. That however death must have occurred from want of nourishment had it remained long shut up, required no proof; such starvation, however, would have required several days for its production, and a period of ten hours could not have had any injurious influence of this character, since we are taught by experience that but little nourishment is required by newborn children during the first few hours of their life. The care which the child received for weeks before its death, proved that it had died from quite other

internal causes, and probably (as the physician to the prison supposed) from a deficient vitality, which had no connection whatever with the exposure to which the child had been subjected. Accordingly we answered the query put to us negatively.

CASE CCCXC.—PLEA OF SELF-DELIVERY.—INFANTICIDE.

On the 11th of November the maidservant H., pregnant for the second time, was suddenly seized with labour; she declared that the commencement of labour was to her the first intimation of her pregnancy! She delivered herself alone in her bedroom, of a female child, which, without looking whether it was alive or no, she left, with the placenta, which had immediately followed it, lying in the bed which she had just occupied. The midwife, who was immediately called in, took up the dead child, tied its navel-string, and washed it; in doing this, she remarked that the child had marks on its neck like the marks of finger-nails. The bones of the head were also, "soft, as if they had been squeezed." The blood-stained hands and arms of the mother also proved to the midwife that she must have had plenty to do at the birth. At the dissection, on the 13th of November, we found the body to be nineteen inches long, seven pounds and a-half in weight, still very fresh; the cranial diameters were respectively three inches and a-half, four inches and a quarter, and five inches and a-half, and all the other signs of maturity were present. On the right side of the neck, standing over one another in a triangular form, there were three small patches of cinnabar-red, each the size of a lentil, soft to cut, with abrasion of the cuticle, unecchymosed, presenting the evident characteristics of the marks of finger-nails. Neither on the head nor elsewhere were there any marks of violence visible externally. Of the appearances in the abdomen, I need only mention that the diaphragm stood beneath the fifth rib; that the liver, kidneys, and vena cava contained much blood, and that the urinary bladder was empty, and the large intestine distended. The docimasia pulmonaris proved with the utmost certainty that the child had lived. There were no traces of violence upon the larynx or cervical vertebræ. The appearances in the head were more important. The whole of the right parietal bone was covered with a blood-coagulum one line in thickness. The inferior portion of the left parietal bone was covered by a similar effusion half-an-inch in diameter. The right parietal bone was

broken in two right across its middle by a semicircular fracture, the edges of which were serrated but not ecchymosed. Upon both the cerebral hemispheres there was in the region of the vertex an extravasation of dark coagulated blood one line in thickness and two inches in diameter. The vessels of the pia mater were tolerably empty, the sinuses however were congested, and the basis cranii uninjured. In our written report we first proved that the child was mature, had lived after its birth, and had died from apoplexy, all which does not require to be detailed here. A similar kind of death might, in newborn children, we went on to say, arise from internal causes, though such a concatenation of appearances as those just described must be regarded as of extreme rarity in connection with natural death; that such a possibility could not, however, be regarded as having occurred in this case, but that we must rather suppose that the death of the child had been caused by violent and unnatural treatment, and that this idea was supported by most convincing appearances on the body. "Amongst these we reckon the extravasated blood-coagulum upon both parietal bones, which would not have been merely the result of a severe labour, since the documentary evidence proved that the labour in this case had not been of that character, but had been rapidly brought to a close, and particularly the fracture of the right parietal bone, which was thereby quite divided in two. Such appearances permit us to conclude with perfect certainty that violence has been inflicted on the head of the child, and that the violence has been of a blunt crushing character, such as strong pressure with the hands, or striking of the head against some hard body, &c. That no trace of any violence was found externally upon the head cannot be brought forward as counterproof, since our own personal experience in a very great number of the most different cases, has taught us that the most important results of fatal violence are very often found internally, without there being any appearance on the body externally, which could have led to the suspicion of such violence. And this constitutes a most instructive warning of the insufficiency of any inspection of a body by non-medical persons. Further, there were found upon the right side of the neck of the body of the child three cinnabar-red patches, which had not arisen spontaneously during the act of birth, but had the appearance of the marks of finger-nails, affording thus another proof of the correctness of our supposition." Accordingly we did not hesitate to declare that the death of the child had been caused by violence. The jury brought

in a verdict of "Guilty," and the accused was sentenced to the statutory many years' imprisonment in bridewell.

Three years afterwards, the precisely similar case (CCCLXXX.), already related, came before us, in which the subsequent confession of the accused confirmed the correctness of our opinion in regard to the infliction of violence.

Case CCCXCI.—Birth into Excrement.

An unmarried woman, who had concealed her pregnancy, as is so frequently done, up to the last moment, felt a desire to go to stool, and cowered over a wooden bucket about a foot and a-half high. She evacuated into it a considerable quantity of excrement and urine, and immediately afterwards, according to her statement, the child was forcibly expelled. The body, which was brought before us two days subsequently, was much stained with fæces. The diaphragm stood comparatively low, between the fifth and sixth ribs. The trachea, œsophagus, and stomach, were quite empty and normal. Both the lungs were brownish-red, quite unmottled, were strongly retracted, did not crepitate on being incised, did not give vent to any bloody froth, and were altogether incapable of floating. In this case also the urinary bladder was empty and the large intestine full. Correctly, as I think, paying no attention to all those subtleties whereby Henke and his followers seek, by means of cases such as this to throw doubt upon the value of the docimasia pulmonaris, we simply declared, that the child (born in the eighth month) had been born dead, and that the results of the dissection did not show that any third party had been to blame for this still-birth, thus very properly leaving it to the presiding law-official to ascertain whether there were any other circumstances connected with the case which might appear to throw blame on the mother, in regard to the peculiarities attending the birth. No further inquiries were made, and no report was subsequently required from us,—a proof that the case was allowed to drop after our summary opinion had been given.

Case CCCXCII.—Birth into Excrement.

The mother of this child, a *primipara*, declared that after repeated and long-continued tenesmus, which had several times driven her to the night-chair, which was filled with excrement to within nine inches

of the seat, she was at last delivered of child, placenta, and cord while sitting there. The child was found by an eye-witness of the scene with its head sticking in the fæces. It was mature, and come to the full time. The appearances found were very decisive and were, human excrement in the mouth and on the tongue, and more than a tablespoonful of it in the stomach; the diaphragm stood at the fifth rib; the lungs were dark blue, with a few bright-red patches; they did not reach to the pericardium, and were covered with a few petechial ecchymoses; they were perfectly buoyant, all but a few portions, and emitted a sound of crepitation and bloody froth on being incised; the blood was very dark, the heart empty, the mucous membrane of the trachea (the body being quite fresh) was of a bright red; several bits of fæces were sticking in the larynx, more of them in the œsophagus; the jugular veins were turgid, the cerebral veins and sinuses were much congested. A remarkably distinct example of suffocation in excrement!

Case CCCXCIII.—A Newborn Child taken out of a Privy.

This case was equally clear. The mother declared that she had born the child into an empty pail, and as she thought it was born dead, she flung it into the privy. This statement was not confirmed by the dissection. The child was a boy, born in the eighth month, and its diaphragm stood between the fourth and fifth ribs. The stomach was "distended with a yellow fluid smelling of human fæces." The vena cava was tolerably congested, the liver contained much blood, but yet not remarkably more than is usually the case in newborn children. The lungs were considerably retracted; they swam while entire, but when tested after being cut in pieces, the upper lobe of the left lung and many pieces of the right one sank. On making incision into the lungs an unusually great quantity of dark bloody froth escaped with a crepitating noise. Neither larynx, trachea, nor tongue had any foreign substance in or upon them. The œsophagus was also empty. The brain was so soft from commencing putrefaction that it could not be properly examined; there was, however, distinct hyperæmia of the vessels of the pia mater. We gave it as our opinion that the child had lived a short time during and after its birth; that it had died from pulmonary apoplexy, and that its death had been caused by drowning in fluid fæces.

Case CCCXCIV.—Birth into Excrement.

This unmarried *primipara* had been also driven by necessity repeatedly to the night-chair (in June), till at last her long absence caused alarm. Her sisters found her lying senseless upon the blood-stained floor close to the night-chair, which was still open, quite full, and also spattered with blood; its opening measured eleven inches in diameter. The child was taken out of the fæces quite dead. The accused, who had no reason to conceal the birth, as her seducer was to marry her in a few months, declared that she had, while sitting on the night-chair, indeed felt something pass out of her body, but did not know what it was, as she swooned away, and all she remembered was having attempted to stand up. The child was mature, and had breathed. The lungs completely filled the cavity of the thorax; they were perfectly buoyant, of a bluish-red mottled with lighter patches, and contained dark bloody froth distinctly smelling of human excrement, and the diaphragm stood between the fifth and sixth ribs. The heart contained blood only in the coronary veins. The trachea was injected with bright red, and both it and the bronchi were filled with yellowish-coloured fæcal fluid, a similar fluid was also found in the œsophagus. The mouth and fauces were distinctly coated with fluid fæces. The liver was unusually dark and full of blood; the stomach was three parts filled with yellowish fæcal fluid, the vena cava was moderately turgid with dark blood. The scalp had no blood-coagulum on its internal surface; the cerebral membranes were much congested, the sinuses but moderately so. The fact that the child had been drowned in human excrement was indubitable. But we also accepted the truth of the statement that the birth had actually occurred upon the night-chair. The absence of any blood-coagulum upon the occipital aponeurosis proved that the birth had been precipitate; the amount of blood upon the night-chair was also readily thus explained; but it was more difficult to explain this upon the supposition that the child had been born first, and then thrown in through an opening so wide as this was, and the difficulty was all the greater that no other place was found on which the birth could have taken place. Finally, the situation in which the accused was found lying senseless close to the night-chair was also in favour of the idea that the birth had taken place there.

CASE CCCXCV.—BIRTH INTO EXCREMENT.—DEATH FROM SUFFOCATION.—SINKING OF THE LUNGS.—INTENTIONAL INFANTICIDE?

This case was the most instructive of all those many similar ones which constantly come before us in regard to the value of the docimasia pulmonaris, and deserves to be detailed at length. This unmarried *primipara* had also the usual story to tell; she was not expecting her confinement, and feeling a desire to go to stool, had been suddenly delivered of her child, whereupon she had become senseless, &c. The police report, however, supposed that she had flung the child into the privy *after* its birth, since the umbilical cord was cut and the placenta wanting; the man who had the charge of emptying the cesspool at night having found the child in doing this, but not the placenta. The child was a mature girl (twenty and a-quarter inches long, seven pounds heavy, &c.), with the usual cranial and shoulder diameters (three, four and a-quarter, five, and four and three-quarters inches); in the mouth, fauces, and nostrils there was a considerable quantity of human ordure. The diaphragm stood between the fifth and sixth ribs; the stomach was *quite filled* with fluid human fæces. The vena cava was tolerably well-filled with dark and not unusually fluid blood. Nothing else was found in the abdomen of any importance. The thymus gland was very large, and almost entirely covered the pericardium. With the heart the lungs sank at once in the water; without the heart they sank more slowly. Their colour was precisely that of the spleen, the middle lobe of the right lung, however, exhibited a few lentil-sized brighter patches; the edges of both lungs were also somewhat brighter in colour. Petechial ecchymoses were scattered over several parts of the lungs. Each lung, as well as each lobe, sank in water, but the middle lobe of the right lung very slowly. No portion, however, of the lung, even when it was cut into many pieces, showed itself buoyant. On making these incisions no crepitation was heard, yet in isolated spots of both lungs a very little bloody froth could be squeezed out, and from such spots when squeezed under water fine air-bubbles ascended. The lungs themselves contained much blood. The mucous membrane of the trachea was of a bright rosy red, and was seen with the aid of a magnifying-glass to be minutely injected. The œsophagus was empty. In each side of the heart there was about a drachm (imp.) of dark fluid blood. The bones of the cranium were uninjured; the veins of

the *pia mater* were very full, those of *plexus choroidalis* unusually so, as were also those of the cerebellum and the sinuses. In the written opinion which we gave we first proved the maturity of the child and its viability. "It had, however, lived and breathed, though only for an uncommonly short time, although this opinion seems to be but little supported by the results of the docimasia pulmonaris. The lungs sank, both when entire and when cut in pieces, completely under water; their colour, like that of the lungs of a deadborn child, was like the spleen, and no crepitation was perceived while making many incisions. But on the other hand the docimasia pulmonaris, which in this very remarkable case was instituted with quite peculiar care, has still afforded proof that the lungs contained some air, though only in trifling quantity, and consequently the result of but one, two, or three inspirations, since there is no other probable source for the air in this case. This proof consists in the position of the diaphragm between the fifth and sixth ribs, the brighter patches in the lungs, though they were but trifling in amount; the bloody froth and the fine air-bubbles which ascended from the cut portions of the lung when squeezed under water. This case, therefore, like many similar ones, proves *the great delicacy and excellence of the docimasia pulmonaris,* which has here detected a respiratory life that has been ended almost as soon as began. The kind of death already assumed in our summary opinion as that which had proved fatal to the child, suffocation, is in complete agreement with the idea of the pre-existence of life, and completes the proof of its existence. In regard to this, we put little value on the fact that the tongue lay between the jaws, because this is also found after other kinds of death, nor upon the small effusions of blood beneath the pleura, because these, though significative of death by suffocation in newborn children, are also found in those born dead. The minute vascular injection of the trachea, the great amount of blood in the lungs, and the considerable congestion within the cranium are, however, important appearances, and peculiar to death from suffocation. The child must thus have fallen into the fluid fæces alive, and must of course have been drowned therein, and death from drowning is, in a large proportion of cases, death from suffocation." We were at once asked whether the objective facts of the case gave any reason to suppose that the death of the child had been *intentional?* In regard to this the statement of the accused as to the circumstances attending the birth was first examined, and it was shown from general experience, which was in this case

supported by all the peculiarities of the case, that this was perfectly trustworthy. "The supposition of the police," we went on to say, "that the woman J. has *thrown* the fœtus into the privy is untenable. This supposition presupposes that the child has been born elsewhere than on the night-chair, and that it was carried thither. In this case, however, the results of the docimasia pulmonaris would have been quite different, and would have shown not merely the presence of the short life of a few inspirations proved to have existed, but that of the longer life which must have been necessary under the altered circumstances. The child must, therefore, have been born upon the seat of the privy, and it must have fallen at once into the fæces, and been therein drowned. When the police report asserts that the umbilical cord appears to have been cut, this is not supported by the appearances found by us at the dissection, for the serrated, unequal edges of the cord point decidedly rather to its having been torn than cut, and the former was likely to happen from the rapidity of the birth, as it often does. Finally, in regard to the disappearance of the afterbirth, which is certainly remarkable, this *must* have been expelled and passed unnoticed by the man in emptying the bucket; and we may remark, that in precipitate birth the placenta is very frequently expelled either along with the child or immediately thereafter, and that this has all the more likely been the case here, inasmuch as, on examining the bed in which the woman lay down after the birth, not only was no placenta found, but not even much blood. For these reasons, and in itself also, the statement of the nightman deserves no credit, since even a man who possessed a more correct knowledge of what a placenta is—while this nightman, from answers to queries put to him in our presence, showed he knew nothing about it,—might be easily deceived when emptying a bucket filled with solid and fluid fæces, &c., during the night." Accordingly we gave a negative answer to the judicial query in regard to the existence of proof of the death of the child having been intentional, and the accused was at once liberated.

Case CCCXCVI.—A Child taken out of a Cesspool.—The Mother's Guilt unascertainable.

On the 9th of March, a man just about to sit down on a privy, heard the cry of a child from beneath, and found the opening bespattered all round with recent blood-stains, which could also be

traced through the court to the cellar, where an unmarried woman, K., dwelt. The master of the house, who was called by the witness last-mentioned to assist in rescuing the child, deposed that the child was taken out of the cesspool *alive* and apparently healthy; that the privy had been cleaned out just the day before, and that the child had lain upon its back upon a soft and not fluid substance, so that it could not be drowned. Another witness stated, that the mass on which the child lay consisted of "straw and fæces mixed, firm and not fluid," and that the child was "covered with blood." The woman, K., who was at once discovered to be the mother, deposed, that believing her time to be not yet near, she was in so far surprised by the birth, as that having been seized with a strong desire to "pass both urine and fæces, while sitting on the privy the child was suddenly expelled," the umbilical cord was torn and the child fell into the privy. On examination, the opening in the seat of the privy was found to be ten inches in diameter, and was certainly large enough for a child to shoot through it. The child died in the Charité Hospital two days after birth, but we were not made acquainted with any particulars of its illness. At the medico-legal dissection it was found to be a mature male child, and it was by no means unimportant to find that the head was somewhat smaller than usual, inasmuch as its longitudinal diameter was only four inches, its transverse only three, and its diagonal only four inches and a-half. There were no traces of violence found upon the body. The cause of death had indubitably been apoplectic hyperæmia. In regard to the origin of this fatal apoplexy we thus expressed ourselves in relation to a query put to us by the public prosecutor:—"No connection between the cause of this child's death and the circumstances attendant on its birth, can be proved to exist either from the appearances found on the body or from the documentary evidence. For if the fact of the child's having fallen or been thrown into the privy had been either the direct or influential cause of its death, which was not impossible, considering the coldness of the day of its birth, then we would have expected to find—1. Some external trace of this fall, particularly on the head of the child; nothing of the kind was found. But in regard to this, we may remark, that the child fell tolerably soft. And 2, and chiefly, the child in such a case would have died at once from rapidly fatal apoplexy, and not, as actually happened, two days afterwards, having been all that time under medical care." In regard to the statement of the mother as to the circum-

stances of the birth, we must of course declare, as requires no further elucidation here, that the whole of it was, in accordance with medical experience, to be regarded as perfectly trustworthy; and this all the more, that the woman, K., was a *multipara*, and the head of the child was smaller than usual. (We did not examine the maternal pelvis). There were also no medical reasons for supposing that the child had not fallen into the privy at its birth, but had been subsequently thrown into it. Accordingly, in regard to the query put to us, the tenor of our opinion was as follows:—1. That the child in question was mature and viable; 2. That it had died of apoplexy; 3. That the results of the dissection did not reveal any external violence as the cause of this fatal disease; 4. That no connection could be proved to exist between the death of the child and the circumstances attendant on its birth; 5. That the fact of the child having fallen or been thrown into the privy could *not* be regarded as the cause of its death; 6. That the statement of the woman, K., in regard to the circumstances of the birth, in itself, and in accordance with the other evidence given, as well as in regard to the locality of the privy, and the position and condition in which the child was found, is probable, and, 7. That there is no reason to suppose that the child had not fallen into the privy at its birth, but had been thrown in subsequently. No further proceedings were taken against the woman, K., for supposed infanticide..

Case CCCXCVII.—A Child taken out of the Water.—The Body thus disposed of for economical reasons.

This mature, viable, newborn child, was taken out of one of the small lakes in the Thiergarten,* and had actually been born dead, as was indubitably proved by the docimasia pulmonaris. The child consequently was dead when flung into the water, but appeared, when externally inspected, just like the body of any other drowned child. Since, whilst the abdomen and genital organs were still of the usual corpse colour, the head was already grey, and the breast green from putrefaction. It was interesting, however, and assisted in clearing up the case, to find that the umbilical cord had been tied with a hempen ligature (pack-thread). Who had applied this ligature? The mother (who was and is quite unknown) when she had secretly given birth to her illegitimate child? And for what purpose had she

* Public park at Berlin.

done this? Or perhaps some one assisting at the confinement, a midwife or possibly only a monthly nurse? But neither of these, not to speak of a physician, would have used such a thread as a ligature. Probably therefore the child was not born secretly, but before several witnesses; probably also, it was quickly and easily brought forth, and some silly old woman present thought that she must tie the umbilical cord. And after they were convinced that the child was dead, it was in the highest degree probable that to save all further trouble, particularly the police notice and the burial expenses, it was carried outside of the gate and flung into the water.

CASE CCCXCVIII.—BODY OF A NEWBORN CHILD WITH ITS SKULL-CAP SAWN OFF, TAKEN OUT OF THE WATER.—THE BODY THUS DISPOSED OF FOR ECONOMICAL REASONS.

The economical reasons were in this quite indubitable, and the case itself was too peculiar to be omitted here. It possesses indeed not the slightest interest in a diagnostic point of view. It was a mature male child that was taken out of the water, and was already (in October) so highly putrefied that it could only be inspected externally. But it was thereby discovered that the calvarium had been scientifically sawn off, and the scalp again stitched up in like manner. On opening it again, the cranium was found quite empty. Evidently therefore the child had been dissected by a private physician to determine the diagnosis, and had subsequently been thrown into the water by its relatives, instead of being buried.

CASE CCCXCIX.—A NEWBORN CHILD TAKEN OUT OF A CHIMNEY.—THE BODY THUS DISPOSED OF FOR ECONOMICAL REASONS.

This case is in so far interesting, that our opinion was subsequently entirely confirmed by the confession of the mother. The docimasia pulmonaris proved indubitably that life had existed subsequent to its birth;* the only cause of death to be discovered in the body was cerebral apoplexy, which had arisen from internal causes. In regard to the place where the body of the child, rolled in rags and linen, was found, an unheated chimney (in April), we stated, that the child had been placed there after death, and most probably only to get rid of it more cheaply than by burial. The mother was ascertained

* The lungs of this child are represented Plate VI. Fig. 16.

to be a Russian maid-servant, travelling with a family. She confessed quite openly that she had secretly given birth to the child, which had only lived a short time; that, being strange and unacquainted with the customs of the country, and too poor to provide a more suitable burial for the body, she had concealed it in the chimney, her family being just about to depart.

CASE CCCC.—COILING OF THE FUNIS ROUND THE CHILD'S NECK.—APOPLEXY.—SELF-DELIVERY.

A mature male child was brought before us (in January) quite fresh, and with the quite fresh umbilical cord, which was *thirty-three inches* long, coiled round its neck, the funis was not tied, and its edges were serrated and uneven (torn). The mother was never discovered. The body was seven pounds and three-quarters in weight, and twenty inches and a-half in length. Its cranial diameters were rather large, and were respectively, three inches and a-half, four inches and a-half, and five inches and a-half, the diameter of the shoulders was also five inches and a-half. There was no trace of injury on the head. There was no proper mark of strangulation round the neck, only on its nape there was a whitish stripe two inches long and three lines broad, not depressed, unecchymosed, and soft to cut. On the right side of the neck there were close to one another six excoriated patches, each the size of a pea, bright-red, and soft to cut, evidently the marks of finger-nails; at the angle of the left lower jaw there was a blue and actually ecchymosed patch the size of a sixpence, and on the left cheek another small excoriation like those described. There was nothing remarkable in the abdomen; the urinary bladder was empty, the large intestine, however, was full, and the anus bespattered with meconium. The right lung was of a uniform liver-brown, wholly retracted, and it sank completely in water, even to its smallest portion. The left lung on the other hand, almost covered the pericardium, was of a bright rosy-red, mottled with blue, and gave vent to crepitation and bloody froth on being incised, which was not the case with the right lung; it also floated perfectly. Within the cranium there was not only a very evident cerebral hyperæmia, but there was also the remarkable phenomenon of an extravasation of dark treacly-blood upon the *basis cranii*. There was no evidence of any other, particularly external or violent, cause of this apoplexy than this coiling of the funis

and none other was required. From the great development of the child the birth might well be supposed to have been somewhat tedious, and it seemed justifiable to assume, that the external injuries upon the neck and face already described, were the result of the parturient woman's own efforts at self-delivery.*

* *Vide* also cases belonging to this category, detailed under the numerals CLVIII., CCXXXI., CCXXXIII.–CCXXXIV., CCLXXVIII., CCLXXIX., CCC., CCCIX., CCCX., CCCXXI., CCCXXII., and CCCXXIV., all in Vol. II.

CASPER

ON

FORENSIC MEDICINE.

BIOLOGICAL DIVISION.

GENERAL DIVISION.

INTRODUCTION.*

§ 1. Nature of the Science.

Forensic Medicine is the science of sagacity, as well as of the combination of particular facts for particular ends. The facts are natural objects, the ends are those of justice as laid down in the civil and criminal codes. The greater the obscurity of the facts, as is so often the case, and the more important it is to discover the truth and clear up what is obscure, in order to destroy the injurious effect always produced on public morals by undiscovered crime, so much the more is the exponent of this science required to possess, besides the requisite scientific knowledge, an amount of subtle sagacity sufficient to prevent him in one case from being led astray by deceptive accessory circumstances, and in another, to enable him to seize the kernel amid the multiplicity of details in which it lies hid, at one time to distinguish the reality of nature from its deceptive resemblance, and another to draw important conclusions from mere traces where the usual results of an examination are almost entirely absent. Forensic medicine, therefore, TEACHES HOW TO DISCOVER AND PREPARE MEDICAL AND OTHER FACTS OF NATURAL SCIENCE FOR THE ENDS OF LAW AND JUSTICE. It has consequently a perfectly different tendency and reference from all other medical teaching. It has, however, also its own peculiar, specific, scientific doctrines. Such as the doctrine of the forms of violent death, of abuse and aberration in regard to sexual propensity, of the simulation of bodily and mental disease, of doubtful live-birth in a child, &c., which belong to forensic medicine alone of all the various branches of medical science. It is, therefore, a science of itself, and its cultivators have often rightly enough

* The Biological Division, though later published in the first (German) edition than the Thanatological Division, is really the *first volume* of this work. All the generalities are therefore following here, instead of beginning the work, as is the case in the later editions.—*Note by Author.*

asserted that those who deny to forensic medicine the character of a specific science, can only do so from ignorance. However, just because it is a science of itself, forensic medicine must exclude everything that does not belong to its own peculiar department, including much that has been both long and generally imposed upon it. As has been already remarked in the Preface (Vol. I.), these burdens erroneously imposed upon it have been of two kinds. In the first place, pure preliminary knowledge, and in the second place, judicial theories, controversies, definitions, and subtleties have been inwoven with the teaching peculiar to forensic medicine, though they are wholly foreign to the subject, for though forensic medicine investigates and labours for judicial ends, and mediately for judicial science, it is not itself the science of law.

§ 2. Instruction in Forensic Medicine.

It is very properly almost universally acknowledged, that profitable instruction in forensic medicine—which is entirely a practical science, based upon actual life, and which wanders into by-paths and error directly it leaves this basis and goes off into the region of pure speculation, that profitable instruction in forensic medicine, therefore, I say—can only be obtained where the teacher possesses a fund of practical material to draw upon. In other words, the public teacher of forensic medicine must either be, or have been a practical forensic physician, just as certainly as the clinical teacher must be or have been a practical physician. Governments in recent times have been more and more impressed with the correctness of this view, and have taken the proper method of bringing this about by combining in one person the offices of public lecturer on forensic medicine and practical forensic physician. In Berlin this has been the case for more than thirty years, but also other Prussian universities, as well as a few of those of Austria, Bavaria, Russia, and Sweden enjoy this privilege, and are therefore in a position which enables them to train up truly useful and really scientifically educated medical jurists. And in time even sacrifices must be made in order to render this arrangement general; for instance, by the removal of courts of law, prisons, &c., in order to take away from diligent and effective teachers the embarrassment imposed on them, which no one can be more painfully conscious of than themselves, of teaching a department in which they can never feel at home themselves for want of the firm basis obtained

by the observation of nature. The very nature of the subject itself certainly prevents such a mass of material for medico-legal instruction as only large towns like Berlin, Vienna, Prague, Munich, St. Petersburg, &c., can afford, from being everywhere obtainable; but even if the teacher could every year exhibit to his scholars only a few cases of doubtful mental disease, of death by drowning, of the docimasia pulmonaris, &c., or increase their knowledge of the relation of the forensic physician to the judicial boards, by coming before these at only a few public trials—and by proper arrangements of the State, all this might be attained even in the smaller university towns —then the benefit both to teacher and taught, both to science and practice, would ere long become evident. Even young lawyers would take a part in such a practical tuition of our science with interest, and would thereby obtain actual instruction, because the objects of investigation brought before them, and the lectures and opinions founded on these, plainly show that the matters treated of are very closely connected with the duties of their future position. I may also here state that my own pleasing experience has taught me that no peculiar talent is requisite to enable one to give to young lawyers a general knowledge of medico-legal matters.

CHAPTER I.

THE FORENSIC MEDICAL OFFICIALS.

Statutory Regulations.

On the position of the District Physician in Prussia, *vide* v. Rönne and Simon: *das Medicinal-Wesen des Preussischen Staates*, Breslau, 1844, I., s. 118, &c.; *Supplementband*, 1852, s. 6, &c.; *Supplementband*, 1856, s. 4, &c.; On the position of the District Surgeon, *ibidem*, I., s. 261, &c.; *Supplementband*, s. 10, &c.; On the position of the Midwife, *ibidem*, I., s. 563, &c., *Supplementband*, s. 18, &c. 2. *Supplementband*, s. 14, &c.; *vide* also W. Horn, *das Preussische Medicinal-Wesen*, Berlin, 1857, Bd. I., ss. 42, 44, 47.

§ 3. Germany and other Countries.

It is not every country that has the privilege, enjoyed by most of the German States, of possessing a body of medical men expressly appointed and bound by oath to carry out the due performance of all medico-legal (and sanitary police) duties. Even in such highly civilized lands as England and France, and also in Italy, &c., the greatest arbitrariness is exercised in this respect by the law courts. In any given civil or criminal case in which the Judge requires such enlightenment as can only be given him by a medical man, he selects according to his own will and judgment one, two, six or more medical men, either in the neighbourhood or from a distance, and to these he deputes the task of making an examination and giving in a report. At one time, personal confidence leads him to select his own private medical attendant, at another, the fame of some generally esteemed medical practitioner guides his choice, quite regardless whether the famous physician or surgeon knows anything of death from drowning, of the docimasia pulmonaris, or of the statute-book itself, &c., to say nothing of his having been engaged or not in these matters. Devergie, from his own Parisian experience, has described the inefficiency of this method in such lively colours that no one can mistake it. To compensate this in some degree, this practice has been in Paris, and in many other places, so far modified as that each court of law appoints

once for all a certain definite number of medical men, from among whom the required experts are each time selected, so that in time these medical men may acquire the necessary experience and practice in medico-legal matters, and also that amount of interest requisite to make them acquainted with the science of forensic medicine and with its progress. But even this is all arbitrary, and each new president of the court may introduce any new regulations in this matter that he pleases. It is fortunately different in Germany, in it the medico-forensic arrangements are such as to afford all necessary security both to the Judge and also to the parties concerned in any civil or criminal suit; for especially in criminal processes the medical authorities first called are legally only those whom the State has assigned to the judicial courts after previously ascertaining their knowledge in this department, while there is also an organised series of courts of professional experts, to whose judgment the opinion given by the medical men first employed may be referred. It is well known that the chief of this staff of professional experts is the physician (district or town physician, forensic physician, provincial forensic physician, &c.); while the statutory regulations in Prussia and other countries require this physician to be scientifically educated (properly licensed) and skilled in all the three chief branches of medical science, medicine, surgery, and obstetrics. And he must also have proved his special knowledge in the department of public hygiène by a preliminary examination, which in Prussia is undergone before the superior medical Board. Legal knowledge on the one hand is very properly not now required from him, either by the State or by any of the Boards with which he may have official intercourse; and it shows a total misunderstanding of the position of the scientific (that is, *medico*-scientific) witness that so many medico-legal authors have asserted the contrary. But, on the other hand, it is perfectly indispensable that the practical medical jurist should possess a knowledge of such *portions of the statutes* as have reference to his own department, because he will constantly be required to give an interpretation of them from his point of view, and, as experience teaches, this knowledge will always (and rightly) be supposed to be possessed by him by the Judge, who very often, therefore, is contented in certain cases which may come before him to ask his opinion "in regard to § X." of the Statute Book.

The position of the medical jurist is perfectly different now from what it formerly was. Science now requires of him much higher

qualifications and more careful investigations, while the public and oral method of conducting trials no longer permits him, even in the most doubtful and difficult cases, to retire to his quiet study and take counsel with the most esteemed authors, before delivering his opinion, but demands that he shall have his knowledge always ready and at hand, and that he shall possess the talent of delivering his opinion and his reasons orally in a clear and convincing manner. For all these requirements, and the (particularly in medical police) many important duties of a state physician in Germany, the rights and benefits (salary, &c.) offered, are so disproportionately small that every one must hesitate before offering himself as a candidate for such a position; especially as to these drawbacks, he must add the possibility that if he be true to his office, his oath, and his conscience as a fearless man of honour, he may not always be able to count upon real friends either amongst the public or his colleagues.*

Besides the physician, we have in Prussia and in most German countries, the district (official) surgeon; the subordinate assistant of the former in those cases (as dissections) to which they are both summoned; in all other cases which may be intrusted to him by the Judge or the police, he is independent. The idea that a medico-legal physician must be associated with a medico-legal surgeon in order that the district (official) medical board may be properly organised, dates from the period when medicine became separated from surgery. Since the three branches of practical medicine have now been reunited in one, which is represented by the scientifically-trained physician, this separation is no longer tenable, and as has already happened in other German countries, so also in Prussia, we have, luckily, commenced to intrust the situation of "district surgeon," or rather of assistant-physician, to actual young physicians.

Since the introduction of the present mode of conducting trials, however, the official medical jurists no longer possess the monopoly of medico-legal business. Even previous to this, the statutory regulations in Prussia in regard to civil cases, particularly in regard to investigations as to idiocy or insanity, by no means exclusively required that the official forensic physician should be consulted (*Vide* Special Division, § 65), but gave full permission for the consultation of any other properly licensed physician. The present mode of conducting trials permits this, however, even in criminal cases, from the

* In regard to the relation of the medical jurist to the Judge, and particularly to the jury, *vide* § 17.

most trifling case that comes before the college of three Judges, up to the most heinous offence that comes before the jury court. On the part of the court, the public prosecutor, or the advocate for the defence, private physicians are daily called before the court to give their opinion either along with the official physician or to his complete exclusion; thus we see a continual approximation to the customary procedure in neighbouring countries, which, for the reasons already stated, we cannot regard as likely to be generally beneficial. A man may be a highly-respected and well-educated physician, as well as a skilful and experienced practitioner, without possessing any knowledge of the law, or any acquaintance with the prescribed legal forms, or any of the necessary experience in medico-legal matters. Nevertheless this new method prevails universally throughout the whole of Germany, and not even a private physician can any longer for his own sake avoid making himself acquainted with the science of forensic medicine, which has now ceased to be what it formerly was, the somewhat shunned and avoided domain of a few adepts.

What is now the case in regard to every physician, has always been so in Prussia, and, as far as I know, in other German countries, in regard to the apothecaries as scientific witnesses. There is not, indeed, in Prussia one single statutory regulation which compels a licensed apothecary to undertake any investigation and report, belonging to his department intrusted to him by the Judge; but practically no harm has resulted. The Judge very properly presupposes that every apothecary licensed by the State possesses the requisite chemical, botanical, &c., knowledge, and maintains such constant acquaintance with the progress of these sciences, that he is in a position to give a scientific opinion in any matter requiring investigation that belongs to his department, and he nominates him for this purpose either alone, or, according to circumstances, in conjunction with the forensic physician. In all the larger courts, where business accumulates, it is the general and extremely judicious custom to appoint once for all a sworn apothecary, or, as in Berlin, a professional chemist, to whom all such investigations are exclusively committed, whose interest in maintaining a proper acquaintance with the advancements of science is thus increased by the desire to maintain his reputation.

The midwives are in precisely the same position as the apothecaries. It is pleasant to be able to state, however, that since the courts of law have ascertained that every scientifically educated

physician is also acquainted with obstetrics, the medico-legal requirements of the midwives have been in recent times chiefly restricted to such expressions of opinion, as may be occasioned by the circumstances of any case in which they may happen to have been engaged in their private practice.

I have already detailed (§ 54, p. 233, Vol. I.), the sequence of the professional courts as they exist in Prussia, and their mode of action. A precisely similar sequence of professional courts exists, as already stated, throughout the whole of Germany, whether the superior revising courts be constituted by the medical faculty of the university of the State, or by various colleges with different names and official powers.

§ 4. Relation of the Forensic Physician to the Judge.

Statutory Regulations.

Rescript of the Minister of Justice *of the 12th October*, 1811 (*in answer to an inquiry made by the Berlin court of law*). *Though the official physician of this town is bound to obey without opposition any requisition made to him on the part of the court of law, or of any of its members in respect of the performance of any medico-legal examination or inspection, if he fulfil this his official duty, or if he be prevented from doing so by any well-founded reason, there is no occasion for laying down the rule sought to be established in the report dated the 10th of this month, that he should be made subject to the College of Justice.* This subordinate relation, therefore, does not exist.

I take up this question only because it is one treated of by all teachers and authors, who have advanced the most various opinions upon it, though it is really one of those questions which has no actual existence. Every practical medical jurist will scarcely be able to refrain from laughing when he sees the amount of trouble expended by theoretical handbooks, periodical treatises, &c., in attempting to estimate the exact relation subsisting between the forensic physician and the Judge or College of Justice, and to define the limits of his position. In former times views prevailed in accordance with which the position of the forensic physician was held to be a subordinate one; subsequently he was elevated to the same level; and in recent times he has even been raised to the rank of an "Assessor" to the Judge!

These tiresome discussions belong entirely to the number of those which have been *written* into forensic medicine, and are quite worthless in practice, for every forensic physician knows full well that he neither has, can, or ought to have any "position" or "relation" to the Judge. That he, as a citizen of the State, is subordinate to his own forum, can of course be neither meant nor doubted. As a physician, however, he has not the most remote pretensions at any time, or under any circumstances, to any different "relation" to the Judge from that of any other professional witness or *expert*. His position as a citizen of the State binds him to appear as a witness when called upon by the Judge; but the physician has just as little pretension to any "relation" to the Judge, or to be his "assessor," as the coppersmith who is called upon to determine the value of a stolen kettle, the builder, who is required to value a piece of ground, or the learned interpreter who is wanted to translate some piece of Turkish writing. For the physician is nothing more and nothing less than a professional witness, whose attendance the Judge requires when his opinion is needed in any case, or in any doubtful question pertaining to his profession, just as in similar cases he requires the attendance of hundreds of other experts, whose opinion he listens to, having sworn them for that purpose, to whom he orders the statutory fees of witnesses to be paid, and whom he then—courteously dismisses. Where is there in all this any question of a peculiar "relation to the Judge?" All that has been brought forward of an opposite view displays a practical ignorance of the position, and is nothing but idle fancy, the emanation of that erroneous idea which has certainly the authority of a few centuries in its favour, but nothing else, that forensic medicine and the science of law, physician and Judge are as it were in a peculiar state of connubial relation, in which it was of consequence to define the position of the consorts to one another. But such a *connubium* never existed anywhere; the Judges have most properly striven against this idea from time immemorial; eminent jurists of the eighteenth century have been desirous to send the whole matter to Jericho; and it is somewhat remarkable to find that physicians themselves, quite against their own interests, are for ever coming back to this union.

CHAPTER II.

THE MEDICO-LEGAL INVESTIGATION.

Statutory Regulations.

For investigations regarding doubtful mental conditions,—vide Special Division, § 65, *farther on*

For investigations regarding human corpses,—vide Vol. I., General Division, Part III., p. 83.

§ 5. General.—Of the Presence of the Judge.

Since every medico-legal investigation is simply a *medical* one, we scarcely require to enumerate the general conditions and requirements necessary for a thorough and satisfactory examination, since these do not differ from those required in any other thorough medical investigation: a knowledge of the subject, coolness, and impartiality. It is often very difficult for a medical jurist long in practice to maintain his impartiality, because he is always learning more and more of the cunning, deceit, passions, and sinful tendencies of those whom he has to examine. The forensic physician dare no longer be without the usual apparatus required in medical investigations, from litmus-paper and a magnifying-glass up to a microscope, though the latter will be but seldom employed in actual forensic examinations, and in general only for investigating blood-corpuscles, crystals of hæmin, and spermatozoa, and in very rare cases for the purpose of determining the existence of vegetable poisons in the stomach, or of diagnosing the nature of stuffs, as linen or woollen, &c., or of hair, as human or animal, &c.* But in medico-legal, as opposed to private medical investigations, there are a few essential formalities which require to be considered. When I come to speak of the official certificate (§ 16), I shall point out more clearly that a medico-legal

* In regard to the apparatus for dissection (prescribed by statute) and the difference between a judicial and a pathological examination of the body, *vide* Vol. I. p. 83, and § 50, p. 212.

examination can only take place upon the previous official requisition of the proper parties. It has been a source of much dispute, whether *the presence of the Judge* at a medico-legal examination is necessary or judicious, or neither? Since this always takes place purely for the sake of the Judge himself, and in the interests of justice, it ought to have been considered that the regulation of this matter and the answering of this question belongs to the legislature of the State, and not to medical jurisprudence. And the legislature has taken it upon her to do so. In Prussia the presence of the Judge is only prescribed by statute in two kinds of medico-legal examinations, at the investigation of disputed mental conditions, the result of which may be employed as the means of obtaining a legal interdiction on account of imbecility (or mania), and at the examination of human bodies. In the first case, the Judge may and does form a general opinion as to the mental condition of the party examined, as may also the curator, whose presence is also prescribed (*Vide* § 65), and the presence of the Judge at the investigation of human bodies is simply a matter of necessity, and the Prussian criminal code (§ 157) has very properly ordered by statute the "presence of the law officials." For "the law official presiding at the examination of the body"—by which of course no technical direction of the examination is meant—"must first take care to have the body exposed for the purpose of identification to the view of those acquainted with the deceased, and if possible, also, to the suspected or avowed perpetrator of the deed," and must at all events, "take every means to assure himself that there has been no error or mistake in regard to the body." Further, in any case where injuries are found, the Judge must lay before the experts "any weapons which may be found, and take their opinion as to whether the injuries could have been produced by the said weapons," &c. (*loc. cit.* §§ 159, 161, 162). These are all, it is evident, purely and exclusively judicial requirements; and since all that we have related must be decided on the body itself, the presence of the law officials at the examination of it is a self-evident necessity. The case is precisely similar in regard to the medico-legal examination of those bodies suspected to have been poisoned. It is the duty of the presiding law official; and then he is very properly further enjoined to "exercise the utmost circumspection in making sure that the (suspected) solid and fluid matters to be analysed are not changed, but that their identity is placed beyond a doubt;" wherefore these

matters, after being officially sealed, are delivered over to the experts, along with an official report (*loc. cit.* § 167).

The presence of the Judge is not prescribed by statute, and is, therefore, not customary (in Prussia) in any other kind of medico-legal examination except the two referred to. This presence could only be prescribed for one of two purposes. Either it might be intended to act as a check in securing a sufficiently complete and thorough examination on the part of the physician, an object which does not require to be shown to be quite illusory; or the presence of the Judge might be prescribed with the intention that he himself should thereby gather information from the more important appearances found at this examination. In fact, the Prussian criminal code also prescribes (§ 168) that the legal official presiding at the medico-legal examination of a body "shall cause to be shown him everything that can be observed by the senses," and in the case of such very evident appearances as are so often found in the course of these examinations, as, for instance, smashing of the skull-bones, wounds of every kind, the floating of the lungs of children, destruction of the stomach by sulphuric acid, large effusions of blood into the cavities of the body, &c., it is just as easy as it is proper that these should be pointed out to the Judge during the examination. For the intrinsic value of the appearances, however, he is always indebted to the opinion of the physician. And this is the case in a much higher degree in regard to the examination of other objects. What advantage could it be to either party for instance, that the Judge should be present at an examination for arsenic by Marsh's process, and be shown the metallic stain produced upon the porcelain plate? Has the Judge himself an independent conviction of the presence of arsenic? And how is this conviction affected, should perchance the medical jurist know nothing as to the diagnosis of arsenical from antimonial stains? Of what use would be the presence of the Judge at the examination of a case of doubtful pregnancy, of a disputed bodily disease, of a case of pretended rape, &c.? Certainly not the least; indeed it might in not a few cases have an injurious influence.

The presence of the Judge at a medico-legal investigation, *has, therefore, to be decided by the legislature,* and not by forensic medicine. The latter can only declare that his presence in a certain few cases of investigation is judicious; it has, however, no interest in desiring that this presence of the legal official should be extended to the larger proportion of all medico-legal investigations.

§ 6. Inspection of the Documentary Evidence.

The question whether it is necessary or judicious for the medical jurist to be granted permission by the Judge to inspect the documentary evidence received up to that time, to enable him the better to fulfil the object of the examination and prepare his report? has also been much disputed both by lawyers and medical men. In the first place, in regard to the statutory regulations in Prussia in this respect, there only exists one medical regulation in regard to it, of date 1791, and this only in respect to the dissection of the body; in it an inspection of the documentary evidence is debarred, and the medical inspectors are told, "that they must restrict their opinion to the appearances found in the body dissected." And even lawyers of mark have recommended that the physician should be referred for his opinion solely and exclusively to what he finds himself. Of course in this the desire is evident, that the physician should proceed to the examination unprejudiced and unconfused by the mass of preliminary and insufficiently determinate depositions to be found in the documentary evidence; the leading idea evidently is, if anything is to be found, the physician will find it, and will explain it to us, and we will be satisfied. But the physician ought not to add to the evidence a bare description of the appearances found, but conclusions, the scientific results obtained from the appearances found; and this is precisely what is wanted from him. At the time, however, of the promulgation of the ancient regulation referred to, this was in many cases quite impossible, and specially so in regard to the very object for which this regulation was prescribed, and so it remained till the appearance of the New Penal Code (1851). For, as is well-known, up to the time referred to the absurd theory of degrees of lethality prevailed in regard to injuries. Without any knowledge of the previous facts of the case, therefore, the medical jurist was required, from the mere "appearances found in the body dissected," to decide whether a so-called "accidental" or "individual" lethality existed, whether perhaps a man with a fracture had been conveyed for miles unbandaged, whether he was drunk, or whether he had been treated in the most absurd manner possible, &c.!

In other cases, however, the medical jurist does not know what he ought to look for. This is often the case in doubtful conditions of the mind which he may have to examine. For

example, a physician may examine for a whole day a party possessed of some fixed idea without discovering anything that could raise a doubt as to the perfect soundness of his mind, till a single word in the documentary evidence gives him the clue, and in one instant the case becomes clear. In other cases again, that often occur, without such an inspection of the evidence the physician is obliged to rely solely on the statements of the person examined, consisting in general of lies and fraudulent statements, or at least of intentional exaggerations. Such cases are most frequent in accusations of rape, of injury, &c. The person injured gives him, for example, a perfectly untrue history of the occurrence and description of the instrument employed, in order to lead the examining physician to an erroneous decision in his own favour, while an inspection of the evidence and the statement of eyewitnesses of the occurrence at once puts the matter in its true light. It is therefore the task of the physician in every case to bring the facts ascertained in evidence into unison with the appearances found, and where this cannot be attained, to explain in the opinion which he gives that such is the case. It is perfectly certain, as I can testify from the experience of hundreds of cases, that a knowledge of the documentary evidence is not only often very necessary, but at times actually indispensable, so that the medical jurist very often finds himself so placed that he must beg from the Judge a sight of the evidence either before the examination or subsequent to it, and before giving his opinion, where the Judge has not already spontaneously placed him in possession of the documents, which is the usual practice in the law courts of Berlin. Where a different custom prevails, it will be of use, at least to the (Prussian) medical jurist, to know, that there is no statute nor regulation in existence which forbids the Judge to grant a sight of the documentary evidence to the medical jurist; should this, however, be refused, then there is no other course open to the physician in cases which positively require it, than to declare that the mere results of his examination without any previous knowledge of the circumstances of the case, do not suffice to enable him to give a conscientious and satisfactory opinion in regard to the case. There must be something strangely peculiar in the parties occupied with the case, if the Judge should, after such an explanatory appeal, still continue his refusal. Finally, however, the present system of public oral trial has placed the question of the inspection of the evidence in a perfectly different position from what it formerly was, especially

when, as frequently happens, the physician is not called upon in the preliminary investigation, but is summoned for the first time to the public trial to make an examination, and at once report upon it orally; in this case, he sees the whole circumstances of the case unravelled before him at the time of trial.

§ 7. Place for the Examination.

Besides those investigations which take place in the presence of the Judge at the court, or in the deadhouse (§ 5), there are others which take place either at the dwelling of the physician or that of the person to be examined. Experience teaches us that the latter is by far the most suitable place, be it ever so small and confined. And yet those to be examined are very frequently sent by the Judge to the house of the medical man; because the expenses are thereby much lessened, particularly in country districts, where, under opposite circumstances, travelling expenses, board, &c., would have to be allowed. But, whoever comes to a medical man's house in any legal matter in which for his own sake he wishes to deceive the doctor, brings with him a stick or a crutch, without which he cannot walk; he puts on clean linen, and just before entering he empties his bladder in order to conceal the gonorrhœa with which he is affected; he has had himself cupped the day before, quite unnecessarily, in order to be able to show the fresh scar; he brings his wife with him, because he is so weak-minded that he cannot find the way by himself; he brings with him pills and mixtures which have been prescribed for him within the last few days, &c., &c. How often, however, when, with the order in our pocket, we suddenly drop upon the person to be examined at his own house, do we not find all this reversed. The man with the crutch digs and plants in his garden; he with the gonorrhœa cannot hide his disease; the woman, with so weak a stomach that she cannot digest the prison diet, is enjoying with her family a very inferior meal, and that other, who has formerly presented herself in a double dress and rolled in shawls, because her medical attendant has warned her to avoid the slightest exposure to a draught, is met in stormy weather not only not at home, but going to a fair or to the races. Such experiences are of such common occurrence, that in innumerable instances, in which I have felt a doubt about the case, I have felt it to be my duty to pay repeated subsequent visits at their own house to parties who have been sent to mine

for examination by the Judge. In a very high degree is this the case in the examination of disputed mental affections. All medico-legal and alienist physicians know how cunningly and consistently disease may be concealed by those, particularly if only partially imbecile, who have any object for dissimulation; for instance, when (how often is this the case!) they earnestly desire an interdiction to be removed. Such parties, when "sisted" by the Judge to appear before the physician, come before him in such a fashion that even a man of experience might be convinced of their complete restoration, or in other cases of the falsity of the imputation of mental disease. But when surprised at home for the purpose of examination, these very people are found busy writing nonsensical letters of complaint, whole piles of which lie before them, or with the study of a self-prepared pedigree of nobility, or with the composition of entire sheets of absurd verses, &c.; or we may find some remarkable and quite peculiar arrangement of the dwelling, &c.

§ 8. Object of the Examination.

The medical examination of a living man, *in foro*, may have for its object the attainment of one of seven practical judicial ends. 1. To ascertain the power of undergoing imprisonment, which may be disputed by the prisoner to be on account of some pretended disease; 2. To determine the existence of some doubtful and pretended disease which is said to prevent the person to be examined from appearing before the court; 3. For similar reasons it is often needful to examine the grounds of a disputed ability to labour, or capability of entering the public service, or of a man's continuing to hold an office with which he has long been invested; 4. Injuries on the living may become the objects of a scientific investigation; 5. Disputed sexual relations may require to be examined; 6. The doubtful mental condition of an individual may require to be examined into and determined; and 7, finally, various matters which do not come under any of the above headings, occasionally require to be examined for various ends; these are often enough merely medico-legal curiosities. Of 6894 cases of living persons, medico-legally examined by me up to the end of the year 1858, there were—

	Cases.	Per cent
Disputed capacity for undergoing imprisonment for debt . .	3372	= 48·8
,, ,, enduring a penal imprisonment . . .	1462	= 21·2
	4834	= 70·0

	Cases.	Per cent.
Brought forward	4834 =	70.0
Disputed capacity for appearing *in foro*	120 =	1·7
„ „ service, or other means of getting a livelihood	608 =	8·8
„ results of injuries	389 =	5·6
„ sexual relations	323 =	4·6
„ mental condition	559 =	8·
Various reasons	61 =	0·9
	6894 =	99·6

In other places, districts and countries with different laws, these relations will be certainly modified. For example, the regulation recently promulgated among us, that creditors should, in the case of pretended sickness, immediately cause their debtors to be removed into an hospital, at their (the creditors') expense, has (of course!) very considerably diminished the number of debtors to be examined.

§ 9. Continuation.

1. Disputed Capacity for Enduring Imprisonment.—*a.* Imprisonment for Debt.

Statutory Regulations.

Rhenish Civil Code, Art. 2066. *Personal arrest cannot be carried out when the person to be arrested is above seventy years of age, a married, or an unmarried female, except in the case of fraud.*

As we have seen, almost three-fourths of all cases of the medico-legal examinations of persons alive are undertaken for the purpose of ascertaining their capability of enduring imprisonment. The examination is carried out either with the object of ascertaining whether the person to be punished is actually incapacitated by the state of his health from undergoing *an imprisonment for debt*, that is, whether there be general medical reasons for supposing that an imprisonment for debt would, in his case, be attended with actual danger to life and health? * Or, in criminal cases, whether any such danger is to be apprehended from the carrying out of a sentence of *imprisonment or penal servitude?* The *danger* therefore is, what, from the very nature of the thing, properly understood—and in Prussia

* These are the very words employed in the printed directions of the Royal Burgh Court of Berlin, sent to me when required to examine those endeavouring to shun imprisonment for debt.

also, according to the official direction (*Vide* § 16, further on)—must be *always* kept before him by the officially-sworn physician, and not the mere fact of the actual existence of disease. Many indispositions, complaints, slighter illnesses, and even actual diseases, or dispositions to actually important diseases, such as tuberculosis, are quite compatible with the sufferance of imprisonment, either penal or for debt, without any injury to the health. Indeed, cases often enough occur, in which imprisonment is positively beneficial to the health of those imprisoned, as in gout and rheumatic diseases in autumn and winter; in those broken down by drunkenness; or in cachectic individuals of the lower classes, such as are reckoned by thousands in all large towns; all their wants are provided for, their health-destroying mode of life is properly regulated, and for their improvement the greatest exertions are continally made when they are once brought to penal imprisonment; further, this is also the case with those numerous cases of people with old varicose ulcers, in whom the sedentary life and restricted diet prove more beneficial than their usual habits, &c.

On the other hand, the medical jurist must also pay conscientious regard to those evils often enough observed in other cases, which do not perhaps involve personal danger to the person to be imprisoned, though they may be productive of danger to his fellow-prisoners, or may be only a source of repulsive annoyance to them. This is particularly the case, where, as in Berlin, the debtors' prison has no division for the sick, with a separate staff of attendants, such as exists in all penal institutions. For these reasons in all places possessed of similar arrangements, all those afflicted with actual (not merely simulated!) syphilis, still capable of communicating infection, all epileptics and those afflicted with similar convulsive diseases; all paralytics, obliged constantly to rely on the support and assistance of others, all those completely blind, &c., must be declared to be incapable of undergoing imprisonment for debt. * A horse-dealer suffered from an inveterate prolapse of the rectum; at each attempt to go to stool, as I myself have repeatedly observed, the bowel protruded from four to six inches, and from the presence of hæmorrhoidal swellings it could only be replaced with considerable trouble. It could not be expected that his fellow-prisoners should perform this operation. An umbrella manufacturer had, like the man whose case has just been referred to, for many years avoided imprisonment for debt, and repeated examinations convinced me of the actual exist-

ence of his complaint; he had on the left side of the nates, close to the rectum, a large cystic swelling, which pressed upon the bowel and rendered the evacuation of the fæces extremely difficult; this condition could be artificially alleviated by the assistance of his wife or grown-up children, but this assistance could not very properly be required from his associates in prison! A pawnbroker suffered from chronic bronchial catarrh, accompanied with a very violent barking cough, as I myself have often heard when the sick man was quite unaware of my entrance into the house. This man must also be declared to be unfit for undergoing imprisonment for debt. The same is the case with all those afflicted with cancerous diseases, which contaminate the air of the room in a manner most repulsive, and even injurious for the other prisoners, presupposing that no cells exist for the purpose of isolating those afflicted with such and similar diseases. Also all those suffering from varicose ulcers, which stink even at a distance, and similar disorders. Finally, all those afflicted with real (and not merely simulated) complaints of different kinds—always presupposing the want of an hospital within the debtor prison—must be excluded from undergoing civil imprisonment, not because this would be fraught with danger to themselves, as because their continuance in prison would be productive of a perfectly unendurable burden for the attendants (and also their fellow-prisoners). To this category belong cases of incontinence of urine, which are of frequent occurrence; those afflicted with considerable fæcal or rectal fistulæ, and similar diseases, which are continually polluting the linen and bedclothes, and thus contaminating the air.

Finally, among temporary causes of non-capability for undergoing imprisonment must be recognised recent delivery, pregnancy, and nursing, whenever, as is usually the case, there is no proper place within the institution for the confinement taking place, and no proper attendance for the nursling.

Peculiar cases come extremely frequent before us, in which those about to be imprisoned for debt seek to avoid it, or at least to obtain a longer respite from it, by bringing certificates from their medical attendants, or, perhaps without this certificate, by stating orally, that their disease requires them to undergo a tedious process of cure, or that they have already commenced this, and cannot interrupt it "without danger to their health." The cures thus referred to, are courses of mineral waters or baths, Zittman's cure (anti-syphilitic), Russian vapour-baths, electro-magnetism and the water-cure. Pre-

cisely the same allegation is often made in respect to surgical operations said to be impending. The medical jurist is frequently in a position to ascertain with tolerable ease the untruthful nature of these statements; for instance, when no such diseased condition exists, or any ailment which would necessitate the employment of any such method of cure or operation; for instance, when the person to be examined states, that he "has a cataract" in one eye, but nothing at all requiring operative interference, least of all a cataract, can be discovered. In other cases in which there is no such evident deception, each case must be individualised and carefully considered in regard to all its concomitant circumstances. For instance, it has often enough happened to myself that in cases in which some certain mode of cure, such as Zittman's, or some certain spring, was indubitably indicated, and in which the medical man in attendance had probably spoken, by the way, of employing it, the sick man, who was at that very time according to his own statement in the middle of a cure which could not be interrupted, did not even know the name of the mineral water which he drank, nor how to describe the very peculiar method of employing Zittman's decoction, &c., and thus he betrayed himself. The deceptions which are attempted to be practised in regard to the question of capacity for undergoing imprisonment are innumerable, and the medical jurist cannot be too much upon his guard.

There are always three circumstances which must be considered in estimating the injury to health which may result from imprisonment, since, as we have already shown, even sick persons are not always incapacitated by their illness from undergoing imprisonment. I refer to the duration of the confinement, the locality and internal arrangements of the prison, and the mode of life prescribed administratively for the prisoners. These circumstances vary in different towns and countries. In Prussia imprisonment for debt is restricted by statute to one year, and for a protested bill of exchange to five years; the medical jurist will therefore have to consider in every case the probable effect of so long an imprisonment, and to ask himself in any given case if this man is able to endure so long a period of imprisonment without "danger," though indeed, in by far the larger proportion of cases the imprisonment is of much shorter duration, since of course it is evident, that imprisonment for debt may end at any moment when the claims of the creditor are satisfied. The second circumstance of importance to consider, the nature of the locality, will vary with every change of place. Very large towns generally possess prisons especially devoted

to debtors, but this is not the case with smaller towns, in which, as I myself have seen, the prisons for debtors and for criminals are usually placed under the same roof. Of course, however, a man may, without injury to his health, suffer imprisonment for debt in a favourably situated, well-built house with dry, airy, light, easily heated, never over-filled rooms, and large courts, a locality which is perhaps indubitably more healthy than his own dwelling, whilst some hesitation may be felt in declaring the same man to be capable of suffering imprisonment under circumstances which are entirely different. In regard to the internal arrangements of the different debtors' prisons, much will of course depend upon whether facilities be provided for procuring attendance upon the sick, or medical assistance, or whether this is not the case, as in Berlin, where imprisoned debtors are at once set free on becoming ill. Finally, it is of importance for the medical jurist to consider the different modes of living in the various debtors' prisons. In this respect there is no general rule, not even a rule generally applicable throughout the same country, as in the case of the penal institutions of the different states. The physician can only form his opinion in regard to this from the relative amount of time for daily exercise in the open air permitted by the Boards of administration, and the diet prescribed for the prisoners. In Berlin, the former amounts to the certainly more than sufficient amount of two hours daily; the latter is with us, as is more or less the case everywhere, certainly meagre, since the creditors have to support their imprisoned debtors.* The riotous living and orgies, which the Parisian debtors' prison at Clichy have rendered so notorious, have, so far as I know, never been permitted in Germany.

§ 10. Continuation.—Disputed Capacity for undergoing Imprisonment.—(*b.*) Penal Imprisonment.

In general all that has been just said in regard to capability of undergoing imprisonment for debt, is equally applicable to penal im-

* The debtors imprisoned in Berlin receive, every morning, soup made with fat, and half-a-pound of good ryebread; at midday one quart of thin vegetable broth, made with cabbage, peas, turnips, barley, &c., and a little fat, with quarter of a-pound of bread; in the evening, half-a-pound of bread, and salt; and on Sundays, rice soup, with quarter of a-pound of beef. The prisoners are allowed to be provided with better diet by their families. All spirituous liquors are, however, forbidden.

prisonment, and I have only a few words to say in regard to some modification thereof, which experience has taught me. The simulations, tricks and deceptions attempted to be practised on the medical officer where the matter in hand is a mere imprisonment for debt, are, if possible, greatly surpassed when the party to be examined hopes thereby to escape an imprisonment or penal servitude to which he has been condemned, or at least to postpone its commencement. These deceptions are very often maintained with great obstinacy and consistency, but they have in recent days met with a decided check, in Prussia at least, by the transference of the care of the prisons from the law courts to the Board of police, so that now, when a sentence of imprisonment is handed to the local police for execution, or when they are required to lodge a man in jail for the purposes of preliminary inquiry, they at once, without further inquiry, proceed to lodge the party in jail, provided he is not completely unable to be moved. The real or pretended existence of disease avails him nought, since in every penal prison there are hospitals, and medical assistance is always to be procured. When in any given case the physician to the prison is of opinion that the patient cannot be longer retained, even in the prison hospital, then, for the first time, the medical jurist is consulted, or is charged with the examination of the prisoner already set free, in order that his opinion may be ascertained as to the possibility of the penal imprisonment being carried out. Penal imprisonment is always more severe than that for debt, and although the locality of certain prisons may possess more favourable conditions for the physical welfare of its inmates, than that of others, yet there are certain other conditions which are common to all. In none of the penal institutions have the prisoners, as in debtors' prisons, actual bedsteads and beds, even during the night, and still less so for occasional use during the day by feeble and ailing individuals, but the straw mattresses and woollen coverlets which are laid over the floor for night use, are in the early morning removed from the "number." In penal institutions the prisoners are bound to work (according to their strength), and must complete their daily task under pain of punishment; while debtors may of course spend their time in prison as they please. Convicts are also never allowed to spend so much time in the open air as debtors. Finally, the diet, though on the whole similar to that in debtors' prisons, is yet in so far still more meagre, inasmuch as butcher-meat is given much seldomer in penal institutions, in many only once a-

year. I have ascertained that a similar regimen is also followed in the prisons of other German States, and indeed in those out of Germany, except that the bread in England, France, and Italy is better and lighter.* The medical opinion in regard to a sick or ailing convict must be regulated by a knowledge of their circumstances. In regard to penal imprisoment, however, there are two circumstances which make it somewhat easier to give a decided opinion than in regard to imprisonment for debt. The first is, that the medical jurist learns from the requisition of the Judge exactly how long the sentence of the deprivation of freedom (and penal servitude) has to run, for instance, one day, six weeks, one, two, or six years, or for life. Thus he will be able to declare many persons quite fit to suffer imprisonment for a few weeks or months, whilst he might probably object to declare them capable of suffering imprisonment for a longer period—such as for one or for five years, as in cases of debt or protested bill of exchange (*Vide* p. 194, Vol. III.)—though the imprisonment may possibly not last as long. The second is of not less importance. Imprisonment for debt cannot, but penal servitude may be interrupted. The medical jurist in critical cases may be required to say, whether in regard to the convict's state of health the penal sentence may not nevertheless be carried out "with modifications," and he has then ample opportunity of bringing forward all that can be conscientiously pleaded in regard to the state of health of the convict in question. Thus, in one case, he can insist on the necessity of the

* In Berlin convicts receive:—1. In the towns prison: in the morning, half-a-quart of fat meal-and-bread soup (or porridge) and half-a-pound of good ryebread; at noon, a quart of thick vegetable broth, boiled with fat (similar to that referred to at p. 195, Vol. III.), and a-quarter of a-pound of bread; in the evening, half-a-pound of bread, with salt. On Sunday, the chief meal at noon is flesh-broth, and one-eighth of a-pound of beef is given with it. 2. In the district jail and penal prison the diet is the same, but at midday half-a-pound of bread is allowed, and nine times a-year, on the high festivals, one quarter of a-pound of flesh. In both prisons, convicts are exceptionally permitted to provide their own diet, and they are also allowed to procure beer and sausages from their surplus earnings. 3. In the large Penitentiary one pound and a-quarter of good ryebread are allowed daily. Every morning a soup (or porridge) made with 2 oz. 4 drs. (imp.) of barley-meal; at noon a dish of beans, cabbage, peas, or the like, weighing 6 oz. (imp.), with 8 drs. (imp.) of fat or beef suet, 8 drs. (imp.) of salt, and about $\frac{5}{16}$ of a-peck (imp.) of potatoes. In the evening porridge made with oatmeal, or 2 oz. (imp.) of barley-meal. Four times a-year, on high feast-days, half-a-pound of flesh including bones.

(better and more digestible) hospital diet, instead of that usual in the prison; in another case, on the need there is for permitting the use of a bed, greater freedom for exercise, less strenuous labour, or a holiday once a month of so many days for recreation, &c. But care must be taken not to grant such favours without the most urgent indications, and indeed in every case *the greatest strictness must be exercised by every conscientious medical official in judging of each individual case of disputed capacity for undergoing imprisonment.* He cannot better fulfil the duties imposed on him by his oath of office, the great trust which the State reposes in him, or the requirements of society in general, than by refusing to listen in every such case to any other reasons than those derived from a conscientious consideration of the state of health in question. He has to do with men out of every position in society, and I, in common with every other medical jurist in large towns, have often enough had to examine for the purpose of ascertaining their capacity for undergoing imprisonment, not only the usual large proportion of individuals out of the lowest classes, but also some from the highest circles, and these not only debtors but even convicts. But as the jury takes no cognizance whether the culprit at the bar accused of rape is a man of noble birth, or whether another accused of forgery be a highly-educated lady, and as the physician in his ordinary practice is still less given to model his ideas and treatment of any given disease in accordance with such external circumstances, so must the medical jurist guard against his being influenced by them. I am the more careful in bringing this forward, though of itself it is obviously true, because, particularly at the commencement of forensic life, a man is hardly prepared for the fact, that men from the higher and better educated classes would so grossly seek to get the better of, and so unashamedly try to deceive a medical man in these matters, and also, because a man might hesitate in giving his opinion as to a case of a disputed capacity for undergoing imprisonment, not to regard so great a change of life, as that from a drawing-room to a prison, as an important circumstance likely to be prejudicial to health. Experience does not confirm this idea. I have no lack, alas! of numerous examples of the truth of this statement. But I do not consider it profitable to detail even a few of the many thousand cases observed, illustrative of this question. For each individual case involves nothing else than the usual diagnostic examination, such as every physician must carry out in every case where

disease is stated to exist. It is more suited to the ends of this book to state those *principles* which, according to my experience, are to be regarded as sound in determining any case of disputed capacity for undergoing imprisonment, and this the rather that this question has not received that thorough consideration which it deserves, seeing that its solution constitutes so large a part of the duty of the forensic physician (*Vide* p. 190, Vol. III.). Moreover, the subject of feigned disease in itself shall be considered subsequently (§ 53; *vide* also in regard to the medico-legal certificate, § 16).

§ 11. Continuation.—2. Disputed Ability to appear before the Court.

According to the number of cases of this character that have occurred (up to the end of the year 1858), I have one hundred and twenty times had to determine whether a man's condition of health was such as to prevent him appearing before the court, as he and his medical attendant have supposed. The case is here two-fold. It is stated either that the patient cannot leave his room at all at that time, or that he is in such a mental or bodily condition as to render it dangerous for him to appear before the court. Should the person to be examined be actually found, as often happens, sick and confined to his room or his bed, the case is of course very simple. But in this, as in everything else, the most extraordinary events are found to occur, of which the illustrative cases about to be related give a few examples. The reasons for deceiving the physician are not far to seek. There may be a hundred reasons for unwillingness to give evidence; and a man summoned as a juryman may consider himself entitled to a dispensation on account of his health. Not unfrequently the accused himself seeks, by not appearing at the trial, to prolong the matter; in very many cases the parties interested, who are called upon to take what is called an oath of manifestation—that is, to make a statement upon oath as to their means in cases of insolvency—declare that they are so ailing that they cannot ascertain the state of their affairs, and still less are they in a position to make an oath regarding them; in many cases of divorce, the wives refused to appear at the statutory period for reconciliation, because their feeble nerves could not stand such a shock, &c. In general, these and all such statements, as, "I run the risk of a shock of apoplexy," &c., are pure pretexts and

modes of speech, which will not lead astray an experienced medical jurist. In this matter, too, it is no man's duty to hinder the ends of justice, unless induced to do so by some urgent necessity obvious to every conscientious physician. If the court of law is in the neighbourhood, a man, though actually suffering so much from some unimportant disease as to be unable to walk, may yet be conveyed thither. Should attendance at the trial require a journey to some distant court, we must be guided in our opinion by the circumstances of the case. In other cases the state of the patient may be such that the physician is obliged to declare to the Judge that he cannot appear *in foro*, but that he is quite capable of being examined at his own house; and this is very often done, and the ends of justice thereby attained. Finally, cases have also occurred to myself, in which repeated examinations have been ordered from time to time, and in which I have been always obliged to stand by my previous opinion, that this party cannot appear before the court, and these investigations, &c., have been kept pending for years. An old woman, who was required to be examined in a case of wrong inflicted on an official of the magistrates, suffered from a very peculiar and violent convulsive affection, which attacked her several times a-day. When thus attacked she fell down, and commenced a kind of bellowing cry, which she kept up during the whole time of the convulsion, after which she slowly recovered. I have very often, on making an unexpected visit at her house, found her lying in one of these fits, and have thus convinced myself of their unfeigned character, and this opinion was also shared by disinterested parties who lived in the same house with her. My wits, however, being sharpened by the most unheard of cases of unimaginable and yet actual simulations, I at length held it to be advisable, in the course of years, in which the case was continually emerging, notwithstanding my constantly negative opinion, that at least one attempt should be made to go on with the trial. The accused appeared at the bar; she was quiet, composed, and open, but she was speedily seized by a violent convulsive attack, which at once put an end to the proceedings. I have subsequently had frequent occasion to observe her without her being seized with a fit while in my presence, a fact which convinced me still more of the reality of their existence. The woman died some time ago without having again appeared in court. A meal-dealer was indicted for a fraud on the revenue in which he was concerned. During the investigation he became insane, and was for a

whole year in an asylum. At present he is in a state of complete dementia. The investigation, which has been pending for years, can never be completed, because my repeated examinations of this man must, of course, continually result in the same declaration, that he is not in a condition to transact any kind of business.

§ 12. Continuation.—(3.) Disputed Ability to Make a Livelihood, or for Office-bearing.

Vide the Statutory Regulations in the Fourth Part of the Special Division, § 43.

It is a frequent part of the duty of a medical jurist to investigate the bodily and mental conditions of a man, of whom it is maintained on the one hand, and disputed on the other, that he is either entirely or partially able to support himself, or that he is fit to undertake any office, or to continue to discharge the duties of some office which he has long held. Guardians assert the ability of their grown-up wards to obtain a livelihood, whilst the mother, for instance, or other relatives dispute this. Children to whom the support of their aged parents is burdensome, refuse to do so, and this refusal is complained of. In other cases, again, persons who have been formerly ill-treated or injured, raise an action of damages against those who have injured them, on account of their having been thereby partially or wholly unfitted for obtaining a livelihood. These, and all other cases arising out of injuries (*Vide* § 43, &c.), require the utmost caution in deciding, because a desire of revenge, laziness, and the love of living at another's expense, all combine in creating the greatest exertions to obscure the truth. The question of disputed capacity for office-bearing occurs in regard to officers of every possible kind, when for the benefit of the service, which neither their health nor strength seems to permit them properly to discharge, it becomes a question with their governing boards whether they ought not to be pensioned. Usually it is the advance of age that gives rise to this question, in other cases it is some disease which has lasted long and is apparently incurable, such as paralysis, rheumatic gout, writers' palsy, &c., or repeated attacks of disease causing frequent absence from duty, such as spring and autumn relapses in phthisical patients, attacks of gout, &c., which finally compel the superintending boards to come to some decision in

the case, and the basis for this must be an investigation into the state of the patient's health by an official physician. In general, such cases are precisely the reverse of those met with in examinations undertaken with the view of ascertaining a man's capability for undergoing imprisonment. Egotism in both cases leads to attempts to deceive the physician, but the healthy prisoner gives himself out to be ill, while the diseased official represents himself as healthy, because he cannot do without the salary of his office, and cannot bear to have it lessened. There is nothing peculiar about the investigation; and, in regard to the question of office-bearing, there are seldom any difficulties in the way, because the physician either knows exactly, or by inquiry, can easily and certainly learn, what is actually required in each case. The requirements, nature and extent of the duties of the higher officials of all the associate services, of the subaltern officials of every kind, clerks, messengers, messengers-at-arms, excise, post-office, and railway officials, gaolers, &c., are all very well known. For this reason I suppress the illustrative cases bearing upon this point, for every one knows that a gaoler who has grown quite deaf, an official registrar feeble and forgetful from age, an excise officer, a post-office runner, a railway guard, or other subordinate officer who has become quite paralytic from gout, and must nevertheless do his duty in all kinds of weather, &c., cannot be declared to be fit for his post. On the other hand, I must point out that in some of these cases of disputed capacity for office-bearing, it is often quite impossible for the most conscientious and most inflexibly-impartial medical jurist at once, on his first commission, to pronounce a decided opinion, especially when there is indubitably chronic disease present, and the complaints of the official board requiring the examination, and of the colleagues of the officer who have to act as his substitutes are perfectly well founded. The reason for this—only too well known to every physician—is the uncertainty of prognosis and therapeutics alike in every chronic disease! In one case the person examined states that his medical attendant has assured him that an operation about to be performed will be attended with the best results; in another the same assurance has been made in regard to a course of mineral waters or baths to be taken next summer, or to a course of "Swedish gymnastics" just commenced, and to be continued for some time, or to the water-cure, which also often lasts for months, &c. How often have I been so placed between the patient and his board as to be unable to declare the impossibility of the

success of such a mode of cure and of his consequent complete restoration to fitness for his duties. In such cases the only resource is to request a further examination at a longer or shorter date, and then by a careful consideration of the results attained by the means adopted, and of all the circumstances of the case, a correct opinion may be arrived at, though often only after repeated examinations during the lapse of many months.

Cases of disputed ability to procure a livelihood are surrounded with much greater difficulties, and often, indeed, exceed the limits of medical competence. For in such cases circumstances, and things which are far from being objects of medical science, require to be considered, and yet the medical jurist is asked by the Judge if N. N. is in a condition to earn his living, partially or wholly.* Now, though one circumstance to be considered in such a case is certainly the bodily or mental condition of the said N. N., yet, another is one with which the medical man has nothing to do, viz. the value of what N. N. can produce compared with the price of food and other necessaries. In the case of one action raised, the children desired to withdraw a portion of the aliment hitherto granted their old mother, bedridden for years from paralysis of the lower extremities, declaring that she was able partially to support herself. The spinal paralysis was indubitable, but the woman could certainly knit with some trouble woollen stockings, at the rate of about four pairs in the month. What is the value of four pairs of stockings? Medical science does not enable us to give an answer to this query. I only give this example of many similar cases in order to show that all that is to be done in such cases is to take the medical facts of the case, with all that can be learned as to the ability to work, in each individual case, and lay them before the Judge, leaving him to decide whether any or how much ability to earn a livelihood is thereby proved. In many other cases of this character, medical men are also presupposed to possess another kind of knowledge, which likewise does not come within the scope of their own peculiar science. I refer to a knowledge of the work and technical manipulations in the various trades. This happens in medico-legal practice, not only in cases such as those just referred to, but also where parties injured declare their inability any longer to follow out their former calling (Case VI.); also where young men must resolve upon embracing some one trade or other (Cases IV. and V.). But who has instructed

* *Vide* the statutes quoted: Part Fourth, § 43.

the physician how the shoemaker, the brazier, the hatter, the tanner, or the wheelwright, &c., perform their work in all its various parts? How here the right arm, and there the left one; in one case the chest, and in another the belly, are more immediately required? As one of the results of a scuffle, a shoemaker suffered from chronic periostitis of the left shin-bone. As he was otherwise perfectly healthy. I imagined that there was no reason why he should not be able to follow out his usual employment, but I was set right by being informed that a shoemaker constantly hammers on his knee, which would certainly occasion a painful concussion of the diseased shin-bone. Cases of this kind are of such great importance for both the parties concerned, and involve such grievous and burdensome obligations for the defendants, that they often give rise to litigations of many years' duration, and to a protraction of the case through all the statutory medical courts. I shall therefore relate a few cases, selected from those instances which have come before me.

§ 13. Illustrative Cases.

Case I.—Disputed Capacity for Making a Livelihood.

A widow demanded, through the law, that her daughter, still a minor, should allow her three thalers (9s. shillings) a-month for her support, as she stated that "from her age, fifty-six years, she was now no longer in a position entirely to maintain herself, since she had an abdominal complaint, and her eyes were so weak that she could not work by artificial light, and that therefore she could only make one thaler and a-half (4s. 6d.) a-month at the most." We were required to give our opinion, "whether the Widow B. is entirely unable to earn her own livelihood, or to what extent this may be the case." We declared in our opinion: "—— —— is a woman aged fifty-six, who has formerly supported herself by cooking, but at present, from her ailing condition, she can only do light work. She complains 'of almost every limb of her body,' and the suspicion thus aroused of its being a mere case of simulation, or of hysterical exaggeration of trifling complaints, is raised to certainty by the results of the examination. Excepting a remarkable baldness of the back part of the head, which confirms the statement of B., that she suffers much from headache, there is not one single objective symptom of disease, or anything anomalous whatever to be discovered about her. When

she states that her eyes are weak, and that she must therefore use glasses, she is no worse off than many other people of the same age. There is, therefore, no reason for supposing that B. is less fit for work than she has formerly been, but rather that she is just as able to earn her own livelihood as any other woman of her station and age, which is certainly somewhat advanced.

CASE II.—DISPUTED PARTIAL ABILITY TO EARN A LIVELIHOOD.

This was another case in which the parents had a tedious litigation with their children, claiming support from them on the plea of being only able partially to maintain themselves, which the children disputed. The man was sixty-five years old, vigorous for his age, and free from general disease, excepting a running cuticular ulcer on each of his legs, which were both very red and œdematous. I found him plaiting straw, and sitting with his legs lying horizontal. He stated that he required generally to maintain this position, since the legs swelled when allowed to hang, and when he walked the whole of both lower extremities swelled and became painful, which was quite credible. He was therefore obliged to maintain a sitting posture more or less constantly, and all the less fitted to gain his living by the hard work of an ordinary labourer, his former employment, as in this respect his already far advanced age was an additional hinderance. I therefore decided, "that he is only in a position to earn a living by such easy kinds of work as can be carried on in a room and in the sitting posture, and that he is no longer fit for the ordinary employments of a labourer, his former occupation." His wife was sixty-six years of age, but tolerably vigorous in spite of the usual failings of her age, difficulty of moving and shortsightedness excepted. Her uterus was, however, prolapsed, and was retained by a pessary. I stated, in my opinion, that women with such a complaint are unable for any employment requiring severe bodily exertion, as that prevents the retention of the prolapsed organ. S. is therefore unfit for earning her livelihood by any labour of this character, such as carrying of wood or water, lifting and carrying of heavy baskets, &c., but is rather restricted to the easier female occupations of sewing, knitting, &c., none of which, however, she says she has learned. I did not require to estimate the influence this statement might have upon the decision of the Judge, and, from my own point of view, I gave it as my opinion that "the

parents S. were only fit to maintain themselves partially by bodily labour."

Case III.—Asserted Unfitness to earn a Livelihood.

As a proof of the shamelessness with which an inability to earn a livelihood is often asserted before the Judge, the following case of the plea of a married couple against the authorities of a foreign town may serve as an example. Both asserted that "they were unfit for labour, and must even employ the services of another person for their ordinary household work." The husband was sixty years old, very lean, and had an old and quite replaceable double inguinal hernia, which might consequently be easily retained by a proper truss. He had no other objective ailment or infirmity that could be discovered, and, of course, in regard to the inquiry in hand, no value whatever could be attached to his purely subjective statement, that he suffered from "rheumatic complaints (!)." The wife was blooming and robust, and yet, that she might have something to complain of, she declared that she had "pains in her limbs!" I do not need to state the answer given by us after the results of this examination to the assertion that these people "required the assistance of a stranger to perform their household work."

Case IV.—Is this Person fit to learn a Trade, and if so, what Trade?

This question (which is of such frequent occurrence) turned up in a case of trusteeship, and was laid before me for my opinion. The ward was fourteen years old, and laboured under "a stiffness and debility of the right arm, and weak eyes," and I had to state whether he was quite unfit to learn any trade, or for what trade he was still capable. There was a congenital semiparalysis of the muscles of the right arm, which prevented the boy from making every movement of the right arm with a proper degree of force. Many movements he could nevertheless execute with ease, and had not lost the use of his right hand. I therefore stated that the boy "was quite fit for any trade which does not require any great exertion of the right arm, such as a tailor or bookbinder. The weakness of his eyes is not considerable, and will be no hinderance in learning either of the trades mentioned." He was made a bookbinder.

CASE V.—WHETHER SHOULD THIS MAN BE A BAKER OR A TINSMITH?

I had to state to the Court of Trusteeship, "Whether it was fitter for this ward to learn the trade of a baker than that of a tinsmith?" The boy, aged fifteen years, had a flat chest, and tubercular deposit in the apex of the right lung. According to his statement, during his fourteenth year, while commencing to learn the trade of a tinsmith, he had suffered much from the acid vapours which are constantly given off by the hydrochloric acid which the tinsmiths employ in soldering. This fact, which is correct, was quite agreeable with his statement, that these vapours always made his breathing difficult and made him cough, and was therefore credible. Considering the young man's decided tendency to consumption, and the fact that these injurious influences did not occur in the trade of a baker, I answered the questions put to me affirmatively.

CASE VI.—PLEA OF SUPPORT FOR LIFE, BECAUSE OF ASSERTED INABILITY TO MAKE A LIVELIHOOD, RESULTING FROM THE BITE OF A DOG.

The journeyman flesher, D., had been bitten in both arms by a dog of his master's, five years previous to my medical examination of him; he asserted that by the injuries he had received he had been rendered incapable "of using both his arms normally during all the remainder of his life, so that it was beyond his power to earn a livelihood, similarly to what would have been the case had his arms remained uninjured." The judicial queries put to me will be discovered further on. In regard to the actual state of matters I found in the first place, certainly on both arms, that is, on the right arm and forearm, and on the left forearm and hand, but particularly on the right arm, numerous white and completely cicatrized scars, which might very probably be the marks of the bite of a dog. Both the right and the left arm, as well as the face, were covered with a serpiginous eruption. Nevertheless, in spite of the scars and serpiginous patches *the right arm and right hand* were perfectly moveable, useful, and fitted for every kind of work. Not so, however, the left upper extremity. On the back of the wrist joint a long narrow white scar, which was not moveable, and showed, therefore, not only

that the cuticular coverings had been divided, but also the muscles and tendons lying beneath them. Also in the palm of the hand there was a similar scar with rounded angles. That the tendons of the fingers had been affected by this injury was proved by the *contraction* of the tendons both of the middle- and of the ring-fingers, which D., as I satisfied myself, could neither open or close properly. "When the usefulness of the hand is thereby materially abridged, this is much more the case by the fact that the wrist itself has lost its mobility, and can be but very slightly, though still slightly, flexed and extended. On the right side of the back of the wrist there is a scab the size of a halfpenny, the remaining incrustation of a recently-healed sore, which from its present condition it is impossible to say whether it has been merely a serpiginous ulceration, or the result of an injury which has penetrated to the wrist-bones. The present condition of this hand is to be regarded as incurable and permanent, since though the operation of tendo-section, which is in itself uncertain in its results, might possibly remedy the contraction of the tendons, yet the anchylosis of the wrist-joint must ever remain as inaccessible to any remedial procedure, as it is impossible for it to be removed by any purely natural process. Considering the mechanical integrity of D.'s right hand, and the slight mobility still retained by his left one, he cannot be declared to be wholly unable to earn his livelihood by labour, since he is perfectly fit for many different kinds of work. This is less the case, however, in regard to his own peculiar trade, which presupposes and requires not only bodily strength, but power and dexterity in *both* hands, and in both of these respects, as already related, the left hand of D. is much restricted." Accordingly I answered the queries put to me thus:—*ad* 1. "That the arms and hands of D. are not now in a normal condition, and that he is prevented from using the left hand as he would had it been uninjured. *ad* 2. That D. has not lost the power of providing his livelihood by the labour of his hands; but that he certainly cannot follow out the trade of a flesher as he could have done had he re-remained uninjured. *ad* 3. That the restoration of the left hand is no longer possible, and that the existing partial incapacity for labour, as more particularly described above, particularly the incapacity for the trade of a flesher, will continue for the rest of his life."

CASE VII.—A SIMILAR CASE.—ASSERTED INCAPACITY FOR MAKING A LIVELIHOOD, FROM BEING RUN OVER.

When, in the previous instance, the case of a distinct trade (that of a flesher) was specially brought before us for our opinion, so in this one, the *absolute* inability to earn a livelihood was asserted to be the result of an injury, and this plea was maintained in the subsequent action for damages. A workman raised an action against a well-to-do master flesher, asserting that "in consequence of an injury to his chest and stiffness of his right arm from its having been broken and splintered by his having been run over by a conveyance, he was no longer in a condition to do any work, and was therefore unable to maintain himself and his family." We had to examine this man, aged fifty-two years, one year and a-half after the receipt of the injury. The fracture of the humerus, which, according to the hospital reports produced, had been a simple transverse one, was perfectly cured, as was to be expected. It was, however, remarkable that such a fracture had taken a period of fifteen weeks to heal, which the medical man in attendance attributed to the diminished "nervous vitality" of the patient. This constitutional habitus of the otherwise flabby and weakly man also explained the peculiar consequences resulting from this fracture, for S— could not move the right hand and arm properly, nor use them with any strength; and there was no feigning in this. The arm was visibly thinner than the left, and the muscles so flabby that he could neither elevate the arm nor close the hand firmly and completely. "Consequently," we stated, "S— certainly cannot perform any hard labour with his right arm; his ability to maintain himself is therefore much diminished. But as he is, nevertheless, otherwise quite healthy, and just fifty-two years old, it cannot be maintained that he is absolutely unable to gain a livelihood for himself as he asserts, since he is still able to maintain himself by acting as a messenger, a doorkeeper, or a rag-gatherer (his present occupation), &c., though certainly more scantily than formerly."

§ 14. CONTINUATION.—4. INJURIES.—5. SEXUAL RELATIONS.—6. DISPUTED MENTAL CONDITION.—7. VARIOUS OBJECTS.

Besides the objects already referred to, the medico-legal examination of living persons may require to be undertaken for many differ-

ent ends. To determine the results of ill-treatment and injuries on those affected both in criminal and civil cases; to ascertain whether any sexual crime has been committed, whether pregnancy exists or a birth has taken place, or whether the mental condition of the person examined is normal or anormal? &c. &c. These objects, as constituting the true scientific portion of the Biological Division of Forensic Medicine will each require to be entered into in detail. But besides these, the practical forensic physician will frequently be asked his opinion as an expert for judicial ends, in regard to the most various matters (excluding here, as always, all reference to the part which he plays as an officer of medical police). In order fully to comprehend the position and duties of the forensic physician, and various demands which may be made on him by the Judge, some reference must be made to those curiosities which cannot be brought under any distinct category, and in which, however, the opinion of the medical jurist, as it usually guides the judicial decision, is fraught with the most important results for the parties concerned. What physician is prepared for this question, which was put to me many years ago—"Can crossing the Line four times occasion an incurable chronic inflammation of the eyes?" "Can ham, sausages, and lard convey the contagion of cholera?" This latter question I answered negatively in 1849, in a matter of inheritance, in which the question arose whether these edible matters, forming part of the property left by a flesher who had died of cholera, and whose body had been kept three days in the bacon room, could be legally sold. "Can a man with a broken rib both walk about and wheel a barrow for several days?" "Is a quantity of butter and cheese, worth many thousand thalers (1000 thalers = £150), so completely spoiled as to be no longer proper food for man? and is it to be supposed that they were already in that condition half a-year previously when they were taken into the warehouse by the plaintiff buyer?" (!) These and a hundred other similar questions have come before me officially. No general indications can be given how such queries should be answered, it will not therefore be superfluous to give a concise selection from such curiosities, so as to allow them to speak for themselves.

§ 15. Illustrative Cases.

Case VIII.—Can a Man with Mutilated Toes walk Two Miles continuously?

This was a case of the utmost importance for the defendant in an action for divorce; he was a man moving in the first circles who was accused of the most abominable impurities, and was thus liable to a severe punishment. A farm-servant was implicated in the matter, having been an eye-witness of one of the deeds referred to, and his testimony was of the utmost importance. The defence, however, asserted, that this man's feet were so mutilated that he could not "walk two miles without considerable interruptions." So this question was referred to me for answer, and I stated that "the person examined has many years ago lost from frost-bite the first or two first joints of most of the toes on both feet, this mutilation being most apparent on the left foot. The feet are thereby considerably crippled, and N. also states that he occasionally feels pain in them. It is evident that N., by the loss of his toes, has lost a very important support of the body in walking. The hinderance which he must thereby suffer is also increased by a peculiar, though not very rare, affection of his toe-nails, which are so overgrown that they are bent round like horns. On the boarded floor of a room I found by experiment that N. could walk tolerably well without any support. It is not, however, to be supposed that with these crippled feet—especially (for the scene lay in the country) over an uneven, slippery miry, loamy, stony or sandy bottom, in short, under circumstances in which even walking with healthy feet is difficult—he could walk any long distance without requiring frequently to rest himself. I therefore answer the question put to me as follows:—"N., from the mutilated condition of his toes, is *not* in a condition to walk two miles without considerable interruptions."

Case IX.—Is N. N. a Jew?

A young man of some education was placed at the bar, charged with perjury. Although at the time of his taking the oath he had stated himself to be "evangelical," and also, as was reported, to have previously once partaken of the Sacrament of the Lord's Supper,

yet he now suddenly came forward with the defence that he was a Jew, and could not, therefore, have sworn a false Christian oath. This unexpected declaration at once put a stop to the trial, and occasioned my attendance being requested by telegraph. I found, on inspecting him in an adjoining room, that he had certainly been properly circumcised, and I had only to explain to the jury-court that a born Christian might also be circumcised, and would require to be so in certain cases of disease (which it would be superfluous to enumerate), that, however, there were neither cicatrices of chancres nor any other appearances in the person examined, which would make the performance of such a surgical operation probable at an advanced period of life. It is well known, that besides the Jews, also other oriental people were circumcised, but this did not concern us in this case. Moreover, that my delaration that N. N. was born a Jew, did not justify the conclusion that he was not a Christian at the time he committed the offence whereof he was accused, the decision of this point forming no part of the duty of the scientific expert.

Case X.—Were a Hundred-and-six Medical Visits necessary in a Case of Inflammation of the Lungs?

The following is a case such as, alas! from the present position of the medical profession with us (and also in other countries!) is of by no means infrequent occurrence, and is very often extremely difficult to estimate properly and to decide. I give it as an example of how to deal with such cases. The physician in question has long left Berlin. The question laid before us was, "Whether the disease of the plaintiff, specified by Dr. W., required more than one-tenth of the visits made by him, and no medicine?"

The plaintiff, M., a master-shoemaker, while walking on the street termed Unter den Linden, on the 21st of September, 18—, was ridden over by the defendant (a young and wealthy man) and thereby injured; nevertheless he was able to go on foot to his own house in the Mohren-street. On the 21st or 22nd of September Dr. W. was called to the plaintiff, and found him "labouring under a concussion of the chest, which had passed into an inflammation of the lungs and pleura." The physician named paid the plaintiff

in September	. . . . .	10 visits.
„ October	. . . . .	31 „
Carried forward	. . .	41

Brought forward	41
„ November	25 visits
„ December	24 „
„ January, 18—	8 „
„ February	5 „
„ March	3 „

Therefore in all . . . . . 106 visits, for which he had charged the sum of 35 thalers, 20 sgr. (= £5 7*s.*). "Presupposing," said we, "that Dr. W. made only one visit daily, the ten visits in September would sufficiently indicate the 21st of that month, the day on which the plaintiff met with his injury, as the day on which Dr. W. had been at once called to see the patient. It is therefore very remarkable to find from the evidence of the prescriptions and of the apothecary's account, that, *seven* days later, medicine was ordered for the first time. Granting that the twenty-two leeches and two cuppings, referred to in the documentary evidence, have been employed during these seven days, which does not, however, appear, it must still be said to be very unusual and remarkable, that in an inflammation of the lungs and pleura, which is one of the most serious and dangerous of diseases, and requires speedy and energetic antiphlogistic treatment, if we wish to prevent at least tedious and seriously injurious results to the soundness of the chest of the person affected, which are not, however, present in the case of the plaintiff, whose chest is now" (the examination took place eleven months after the commencement of the disease) "healthy, all but a small impermeable spot at the base of the left lung, which is not of importance; it is remarkable, I say, that in the first seven days of so important a disease, *no medicine whatever* should have been prescribed. Moreover, that *first* ordered is no energetic antiphlogistic remedy, but merely a gentle mixture which certainly indicates the existence of some slight chest affection (tartar emetic 1 grain, muriate of ammonia 2 drs. (imp.), compound spirit of ammonia and anise one scruple in five ounces of spring-water). This mixture was prescribed to be taken within from ten to eleven hours. Then there was another interval of three or four days without medicine, till on the 30th a purge was ordered, and prescribed to be all taken within twelve hours. The patient then continued other eleven days without any internal remedy, and then on the 11th of October, twenty-one days after the receipt of the injury, and after twenty-one visits had been paid, the physician again ordered a gentle

cooling saline mixture of 2 drs. (imp.) of nitrate of potass and 1 grain of tartar emetic in six ounces of fluid, which has been made up three times. After another interval of six days without any medicine, a so-called pectoral tea was ordered, and two days subsequently, an emetic. Again another week without any internal remedy, and then on the 28th of October, twenty-five bottles of the Obersalz mineral-water were ordered, and a mixture of tartar emetic, digitalis, muriate of ammonia, and compound spirit of ammonia and anise was prescribed; these remedies and also the powder ordered next day of golden sulphuret of antimony and calomel (2 grs. of calomel and ½-gr. of golden sulpuret of antimony every two hours), certainly seem to indicate some inflammatory chest affection. There are also prescriptions for a strengthening mixture on the 21st November; a discutient ointment on the 17th December, and thrice renewed; and twice a calmative or soporific powder consisting of one-twelfth of a grain of morphia, the particular mode of employment of which is not marked, on the 27th of December. It is not possible from such a description of the medicines employed, to form a clear idea of the nature and course of the disease which existed, but this much I do not hesitate to assert, that according to all medical experience, 'an inflammation of the lungs and pleura,' treated positively and negatively in the manner related, would not have run so favourable a course as has been the case here. Amongst all the prescriptions, there is only one that may be reckoned energetic, the calomel powder of the 28th of October, unless we include as the only other exception, the digitalis infusion of the same date. Up to this time, Dr. W. had considered it necessary to prescribe very little medicine of any consequence, but for twenty-eight days he had paid the patient a daily visit. Even in November and December W. paid forty-nine visits, only ordering the strengthening mixture referred to on the 21st of November, and no internal remedies whatever in December. It is to be supposed that the patient drank the Obersalz mineral-water prescribed during November. According to all that has been just related, I must assume that the plaintiff's disease has not been an actual 'inflammation of the lungs and pleura,' and has not urgently required a medical attendance of almost half-a-year, amounting to one hundred-and-six professional visits. The documentary evidence affords no data which would enable us to declare that 'no medicine at all' was requisite for the restoration of the patient to health, and from the very nature of the matter, it is impossible to set exact arith-

metical bounds to the number of the medical visits which may have been required."

Case XI.—Is Quicksilver poured into the Ear a Poison?

We had to examine into the state of health of a child five months old, which its unmarried mother had sought to poison, because she could not obtain food for it; and for the judicial decision of the case there were placed before us, besides the query with which the case is headed, a number of others, the answers to which will be found farther on. The mother, after hearing that quicksilver was a poison, had gone to an apothecary, and purchased six pfennige (about one halfpenny) worth of metallic mercury, and this she had poured into the mouth of the child, on the 13th of March. The child, stated to have been hitherto healthy, was unwell during the following night, inasmuch as it was restless and tossing about, and next day diarrhœa was said to have occurred. Many globules of mercury were found in the excrements by the medical man in attendance; he regarded the complaint as catarrhal, and treated it accordingly, and at my visit to examine the child, fourteen days subsequently, I found it perfectly restored to health, all, except a mucous discharge from the right ear, evidently of catarrhal character, and unattended by any disease of the tympanum, &c. The foster-parents with whom the child lived, however, had asserted that this mucous discharge also arose from quicksilver which the mother had poured into the child's ear, and that they had seen globules of mercury running out of the ear. I declared in the first place, that metallic mercury is not a poison, and only becomes so when it enters into chemical combinations; that it is given in large doses by physicians in certain diseases without any dangerous results, &c., and that, therefore, it is permitted to be sold by apothecaries, and is not forbidden, as poisons are; "that, therefore, the pouring of a small quantity of mercury into the ear, which must immediately run out again on any movement of the body, must be regarded as still less likely to poison; and this needs no proof. Moreover, the accused confesses indeed to have poured the mercury into the mouth, but says nothing about pouring any into the ear; neither has the physician found any mercury in the ear, and if the foster-parents have actually found some, it may, as it ran about the bed, have got accidentally into the ear. In no case, however, can it be asserted, that a dischage from the ear may arise from the pouring of a

small quantity of quicksilver into the ear, and the existence of the former is to be ascribed to catarrh, scrofula, or some such similar cause, which so frequently produce aural discharges in children. Finally, in regard to the amount of quicksilver made use of by the mother, this amounted only to forty grains, a most trifling quantity, while in the cases already alluded to more than a *hundred times* that amount has been adminstered by physicians, and even by myself, not only without any injurious result, but with positive advantage. Therefore, I answer the questions put to me as follows:—*Ad* a, that metallic mercury is of course not to be reckoned a poison; *ad* b, that the amount of mercury administered, as ascertained from the documentary evidence, may generally, as well as in the present case, be given internally without any danger to human life or health; *ad* c, that it cannot be distinctly ascertained from the documentary evidence, that mercury was intentionally poured into the ear of the child, and even if it had been, no injury to the child's life or health could have arisen from it; and *ad* d, that the otorrhea now present has no connection whatever with the administration of the mercury to the child, either externally or internally. The mother was acquitted.

CHAPTER III.

OF THE MEDICAL AND MEDICO-LEGAL OPINION AND CERTIFICATE.

Statutory Regulations.

Prussian Penal Code. § 257. *Physicians, surgeons, or other medical men, who shall, contrary to better knowledge, give incorrect evidence of the health of any man before any public Board or Assurance Company, shall be punished by imprisonment for from three to eighteen months, and also with temporary deprivation of their rights of citizenship.*

Ibidem. § 254. *Whosoever, without any intention of procuring gain to himself or any other person, or of injuring any one, yet with the intent to deceive any public Board or private individual, shall falsely fabricate or forge any passport . . . . . or any evidence demanded by any written requisition . . . . . shall be punished by imprisonment for not more than six months, or with a fine of not more than one hundred thalers* (£15), *&c.**

Circular Missive of the Ministry for Medical Affairs, dated 20th January, 1853. *By decree of date January 9th of this year, I have requested His Majesty's Government and the Presidents of our Police to state their opinion in respect of regulations by which a greater amount of certainty might be attained in regard to medical certificates. After a careful consideration of the usual contents of these, and also of reports on the same subject, requested by the Minister of Justice from the Court of Appeal, the Supreme Court of Judicature, and from the General Procurator at Cologne, I consider it necessary to issue, along with the Minister of Justice, a form of certificate for medical officials by which the person who draws up the certificate is, on the one hand, compelled to give a clear statement of the facts upon which his scientific opinion is based, and to take care that this basis is carefully made out; and on the other, that he is*

* That this paragraph of the Penal Code may also be employed against medical men is proved by a case in which a physician had given a man a certificate of vaccination without having seen him, and in which he was proceeded against under this statute.

constantly reminded of his duty as an official, and his responsibility for the truth and authenticity of his certificate. For this end I ordain, that henceforth the certificate and written opinion of the medical official shall always contain:—

1. *A statement of the reason why a medical certificate is required, the object for which it is to be employed, and the Board before which it is to be laid.*

2. *The statement of the patient or his relatives as to his condition.*

3. *And separate from the statement under 2, the personal observations of the certifier as to the condition of the patient.*

4. *The actual morbid phenomena observed.*

5. *A scientifically-reasoned decision as to the disease, the patient's fitness for transport or imprisonment, or any other question that may be in hand.*

6. *The attestation, upon oath, that the communications made by the patient or his relatives* (ad 2), *has been correctly embodied in the certificate; that the personal observations of the certifier* (ad 3 and 4) *are all consistent with truth, and that the opinion given is based upon the personal observations of the certifier according to the best of his knowledge.*

Moreover, the certificate must be dated and signed in full, and must be authenticated by the official designation of the certifier, and by his seal of office. And Government has to take care that the medical officials in each district are required to observe this form, to renew this notice yearly, and on its part strictly to observe that this form is fully adhered to. In order to enable Government to do this, the Minister of Justice is to notify to all Courts of Law to communicate to their respective police authorities an attested copy of every medical certificate coming before them, which is objected to by the parties opposing, or in which the Court or the public prosecutor shall discover any incompleteness or superficiality, or an omission of any of the points above specially referred to, or any error. The Government must then carefully examine these as well as every other medical certificate which shall reach them in any other way, and must strictly punish every offence against the foregoing resolutions; if necessary, the opinion of the Medical College of the province must be requested, and a report must be made to me in regard to the commencement of the disciplinary investigation.

Since complaints of the untrustworthiness of medical certificates are chiefly made in cases in which the object of the medical exami-

nation has been to ascertain the possibility of carrying out a punitory or debtorship imprisonment, and as I have frequently observed that medical officers permit themselves in such cases to be influenced by a sympathy altogether inadmissible, or place themselves in the position of an ordinary medical attendant, who has to prescribe for his patient, living in freedom, the most suitable mode of life, therefore I have to request that the Government in each district shall take care that its medical officers are warned against committing any such blunders. In such cases the medical officers frequently assume that the mere probability *of an* aggravation *of the state of health of the person arrested, by the deprivation of his freedom, is a sufficient reason for temporarily postponing the punitory or debtorship imprisonment. This is a perfectly erroneous idea. Imprisonment almost always produces some mental depression, and also similarly affects the bodily functions where the prisoner is not particularly strong or perfectly healthy, preexisting disease being thus almost always aggravated. But this is no reason why punitory or debtorship imprisonment should not be carried out; moreover, as a prisoner he will be provided with medical attendance, and he cannot, therefore, be declared to be unfit to undergo his punishment. The medical officer can only plead for deferring the punishment, &c., when, after a* conscientious *examination of the condition of the person arrested, he is* convinced *that the carrying out of the imprisonment would be attended with* immediate, considerable, and irremediable danger to his health and life, *and when he has attained this conviction from the morbid phenomena* observed by himself, *and which he is in a position to* support *by scientific reasons. Any other conception of the duty of a medical officer deprives the punishment of its gravity, paralyses the arm of justice, and cannot therefore be justified. This is earnestly commended to the consideration of all medical officers.*

(Signed) v. RAUMER,
Minister for Religious, Educational, and Medical Affairs.

BERLIN, 20th January, 1853.

To all the Provincial Governments.

In the CIRCULAR MISSIVE OF THE SAME MINISTRY, dated 11th February, 1856, after directing that the foregoing regulations shall be maintained in force, it is further ordained, "*that for the future the certificate referred to, besides the complete date of its execution, shall also contain the place and day when the medical examination*

took place, and that the MISSIVE (given above) *of date 20th of January*, 1853, *shall be also applicable to those certificates granted by medical officials in their capacity of private physicians, and to be used before Courts of Law.*

CIRCULAR RESCRIPT OF THE SAME MINISTRY, dated 13th March, 1822:—*The Government is herely commissioned to forbid all district physicians and surgeons in its department, without special permission of this ministry, to publish their judicial reports before the lapse of five years from their promulgation, even with the omission of the names of places and people.*

CIRCULAR RESCRIPT OF THE SAME MINISTRY, dated 3rd December, 1850:—*The custom which many forensic physicians have of making more use than is absolutely necessary of Latin and Greek terms in drawing up their reports in regard to corporal injuries, disputed mental conditions, &c., has given great offence, particularly to the recently-introduced public Courts of Law, because these reports are thereby less easily understood by the public at large, and particularly by the jury. On the other hand, it is not to be denied that a complete omission of the use of words of foreign extraction would injure the scientific completeness of the report, as in some instances the vernacular expression or any circumlocutory description of the thing would not so distinctly mark what it is, as the word which science has adopted from a foreign language. I am therefore forced to recommend, through the Provincial Governments and the President of Police here, that all forensic physicians should endeavour to hit the happy medium, which consists in this—that foreign words should not be employed for things which are just as correctly or better expressed in the vernacular, while in the opposite case the foreign word is to be retained, and in certain cases to obviate any doubt that may arise from the use of the vernacular expression, the Latin or Greek word is to be added within brackets.*

For other directions and regulations in regard to the medical certificate, its probative value, necessity for its being stamped, &c., *Vide* v. Rönne und Simon, *op.* cit. I. p. 239, II. p. 538.

§ 16. GENERAL.

The same general rules and forms which medical jurists are required to attend to in their written or oral communications in regard to objects examined by them, or in the answering of questions put to

them by the Judge, hold good alike for the shortest certificate and the most detailed report, for all evidence of little apparent consequence, as well as for those important and consequential reasoned opinions in regard to disputed mental conditions and cases of medico-legal dissections; the former of these will be specially considered by-and-by (§ 57), the latter has already been so (General Division, § 52, Vol. I.). At the investigations which serve for the basis of these two kinds of reports, the legal officials are, according to Prussian law, required to be present always and without exception at the inspection and dissection of dead bodies, at the investigation of disputed mental conditions in civil cases the legal official is frequently, and in criminal cases generally, not present. All other investigations are carried out by the physician alone, without the presence of the Judge, and he subsequently gives in his report (certificate). The form which must be followed by the Prussian forensic physician in drawing up these documents, is contained in the ministerial missive already given (p. 217, Vol. III.), and similar regulations also exist in every other German country. In the regulative missive nothing is expressly stated (consequently the reverse is not prescribed), in regard to what, from my own experience, I can affirm to be extremely judicious, and by which the forensic physician will be saved much trouble. I refer to the advice to grant official certificates only upon a requisition from judicial, police, government, or other ruling Boards, and never on the request of the party concerned or his relatives, &c. Whoever applies personally to the physician for a certificate, surprises the physician; but I have to repeat (*Vide* § 6), that it is much more conducive to the attainment of the end that the physician should surprise the party stated to be sick. This method of never privately giving an official medical certificate, has also this important advantage, that when the forensic physician has waited for the official requisition, he does not hand over his certificate or report to the party concerned, but to the Board requiring it, by which he is saved much trouble, and many unpleasant scenes, should it be unfavourable to the party concerned, as must so often be the case. In those other cases, of such frequent occurrence, in which the person to be examined presents himself to the forensic physician for that purpose, provided with an official order, in order to extort a certificate *brevi manu*, it is advisable to refuse to grant it, when what he requires *cannot* be conscientiously certified of him, *e.g.* that he is too ill to suffer imprisonment, that he is incapable of

procreating, that he is qualified for a pension in his branch of service, &c. Further steps are open to the party concerned. The granting of certificates is always, but especially in an extensive medico-legal practice in large towns and well-peopled districts, a most unpleasant and hazardous task, which inexperienced persons and those who know nothing about it would scarcely imagine. The forensic physician cannot conceal from himself that in every witness brought forward he will, without exception, find a foe! In civil cases it is the opposing party who perhaps loses his case, because the medical certificate was contrary to his statement; in criminal cases it is at one time the public prosecutor, at another the advocate for the defence, according as the physician has been compelled to give his evidence for or against the party accused. Again, in a case of a report as to the medical or corporeal fitness of a man to undergo a punitory or debtorship imprisonment, the last hope of the party concerned, after perhaps years of delay, and every other attempt to escape has proved vain, is directed towards obtaining a favourable medical certificate! But this danger can only be avoided when the forensic physician proceeds to his task fearless, upright, sternly incorruptible, and true to his conscience and his oath of office. Truly it will not fail, that in one case the interest of the party concerned, in another that of some colleague will be injured, and perhaps some friendship alienated, which had been heretofore highly valued. In smaller places, too, it will happen that by a single unfavourable certificate the forensic physician may raise up influential opposition among the public, and injure his private practice; but in time this loss will be repaired, for qualities such as those mentioned will fortunately in all times and places command public respect, and—it is no slight reward to be able to lie down to rest every night with an unburdened conscience!

I hold myself justified in supposing, that insufficiency of the medical—less probably of the official medical—certificate, so often complained of by judicial and other government Boards, is not based so much in tendencies opposed to those just commended, as in that *humanity* to which they are in duty bound by their position as physicians, which is their ornament as such, and is rightly prized in other circumstances by the non-professional public. But that humanity, which to favour a man tells only half the truth in an official medical certificate, suppressing something in one case, and in another painting a supposition in too brilliant colours, is a mistaken

philanthropy, as is at once evident from a consideration of the facts. For though a physician at the sick bed has only one object to care for, the possible restoration of the patient under his care, an interest which is as it were separate from all the rest of the world, yet when engaged in any official investigation, he has always and without exception, a *twofold interest* before his eyes, *the parts of which are opposed to each other;* in civil cases, there are the interests of the pursuer and of the defender; in criminal cases, there are those of the accused and the public welfare and morals; in government matters there are the interests of a public officer, of his colleagues, and of the public service. It may be very difficult for the humane physician to recommend for a pension an officer, who, from his long and apparently incurable disease must neglect his duty, and who yet with his wife and children depends upon the emoluments derived from its discharge, but *true* humanity will also have regard to the substitute and his family, who have the same claims that the man in office has, whose duty he has for long performed unrewarded. The humane physician will not willingly testify, contrary to the interest of the culprit and his family, that he is capable of undergoing, without injury to his health, a punitory imprisonment of many years' duration; but *true* humanity will never forget to give due weight to the interest of the person mutilated by the culprit, by severe injuries, or otherwise. It certainly does seem inhuman by an official certificate to cause a man to be torn from the bosom of his family and lodged in prison for debt, when a few strokes of the physician's pen would prevent it, but *true* humanity will also think of those other families reduced to beggary by the light-minded debtor. So let the official, as well as the non-official physician, be humane, but let them be so in the true sense of the word, and not at the expense of their conscience and the bidding of a false philanthropy.

In all his official reports and certificates, as well as in every act of his official life, the forensic physician must ever preserve inviolable the golden rule, *ne sutor*, &c. It is easy to understand why forensic physicians so frequently, in their reports concerning the living, but especially concerning the dead, wander into purely legal matters, bring forward arguments based on the criminal law, or advance reasons for or against the guilt of the accused, by casting a single glance at the newest and most recent German hand-books of the science. (The French and English books err much less, if at all, in this respect). Then we find upon the titlepage *a physician* named as the

author, and we cannot conceal our astonishment when we find whole chapters filled with the details "as to matters of law and of police," as to "*dolus* and *culpa*," as to "the difference between a crime and an offence," as to "proof by experts," &c. &c.! Such authors, however, prove at once by these statements alone, that they know nothing about medico-legal practice, and have, consequently, no medico-legal experience whatever, for otherwise they would know that the medico-legal practitioner is *never* required to state his opinion as to any purely judicial matter, and if he should err in this respect, he will be at once called to order by the judge. For as the "Regulations of the Criminal Court" say the physician is only required to be "an expert in medicine," a professional witness, who shall give to the Judge in respect of his own science, and it alone, the necessary explanations in regard to any case which may belong to it. The Judge holds that the physician is incapable of giving an opinion in judicial matters, and rightly so, just as he himself is in regard to medical matters. And the authors of the text-books above referred to would have the same right to express their surprise, should the Judge in any given case enter upon a discussion as to the nature of inflammation, gangrene, &c. I have therefore only urgently to advise a physician before the court, not to enter upon any such matters of law in their written or oral reports or opinions, if they wish to save themselves the shame, which certainly awaits them, of hearing the Judge call to them in the most polite circumlocutory phraseology, "You know nothing about that, and I have not asked you about it"! From my own repeated experience, I can state with certainty, that even the mere interpretation of passages of the statutes bearing on the case, which the forensic physician cannot always avoid giving in his opinion, if he wishes to be distinctly understood, as for instance, in regard to the meaning to be attached to the expression "unfit for work," in § 192 of the penal code, &c., is very ill taken by many Judges; so jealous are they of maintaining their position as opposed to that of the physician. Therefore remember: *ne sutor!*

§ 17. Of the Opinion given orally at the time of Trial.

Since the introduction of the public and oral method of procedure in the events of law, the forensic physician, even after delivering a written report upon the case, is called upon once more to state

his opinion orally before the college of judges or the jury-court, just as happens in all those cases in which no previous written report has been considered necessary by the court. And it is no very easy task, clearly and satisfactorily to lay down orally in public, the scientific reasons and proofs in regard to a perhaps somewhat complicated case, particularly as most physicians are not accustomed to express their thoughts exhaustively *vivâ voce*. In general, the principles laid down in the foregoing paragraphs, in regard to the written, will be also applicable to the oral reports. *A man must speak as shortly and as distinctly as possible, and so as to be easily understood (by the non-professional audience)*, and he will not fail to produce a proper effect upon the Judge and the jury. But care must be taken not to attempt to attain this end in any other way than by a mere statement of facts. When physicians, as has happened, permit themselves to be so carried away as to claim the compassion of the jury for the accused, or, on the contrary, to invoke their severity against the perpetrators of the "atrocious deed," or the "crime deserving the scorn of all humanity," &c.; when they so completely mistake their position as simple *experts*, then they cannot wonder at what will indubitably happen, that before the whole assembled public they will receive a severe rebuke, and be warned back within their own limits, either by the president of the court, the public prosecutor, or the advocate for the defence.

A common fault is obscurity in the general view of the case, or at least in its oratorical demonstration, particularly as evidenced in the constant employment of words of foreign extraction and technical expressions. How often have I heard physicians talking to the Judge and jury of "excited sensibility, reflex movements, coma, idiopathic," &c. &c., without for one instant considering that they were using words and expressions wholly unintelligible to unprofessional parties. In such a case, when perhaps three or four medical men are summoned to a trial as experts, even an able and superior physician will find himself outflanked by some subordinate professional witness or surgeon, and his contrary opinion unjustly accepted, only perhaps because it was expressed clearly, shortly, and simply in the vernacular, and was thus easily comprehended by the jury. Though I need not repeat what has been already said in the foregoing paragraphs in regard to the medical opinion, yet I must still refer to one point in regard to the oral statement of opinion which here must not be left unregarded. I refer to the respect due to those professional colleagues who may

also happen to be summoned as experts in any given case. In regard to this, I myself, during my frequent appearances before the courts have only too often, alas! seen serious offences committed. A. may have quite a different opinion in the matter from B. or C., and he is bound by his conscience and his oath to state it freely and openly, and to support it by scientific reasons. But this must never be done with any display of malicious mockery against his dissenting colleagues, whether by the older against the younger, the man of renown against the man of no repute, and the opportunity of this most unfitting occasion must never be taken for giving vent to long-felt unfriendly feelings. Since in this also, as well as in every other part of the medical life, a physician can only lay claim to public respect, when he respects himself.*

§ 18. Of False Scientific Certificates.

It is a most distressing proof of the average measure of confidence reposed by the courts and governing boards in medical certificates as a whole, that we find the new penal code necessitated to introduce a clause threatening punishment as a warning against false scientific certificates. § 257, already quoted, not only requires the public prosecutor (in Prussia) to take action in any suspicious case, but it gives occasion to any public board, life assurance society, or private individual to bring forward an accusation against the granter of any certificate that may seem to them to be suspicious. Unfortunately, since the publication of the penal code, a complete series of such cases have come before me for revision, as is shown by the selection from them which shall be given presently. Especially in large towns, in which the present constitution of the medical profession is such that there is never any want of needy adventurers in the lower ranks of physic, who are not too nice in choosing between their conscience and their bodily wants, there will never be any deficiency of such repulsive and difficult tasks for the forensic physician, wholly independent of those which may arise from the false humanity of the best and kindest of medical men which is everywhere to be found, and has been already animadverted against. Repulsive—because if any actual offence has been committed in the granting of the certificate, the forensic physician has only to choose between impeaching his colleague with ignorance, or with an intentional error, which

* On the Revision of the Opinion, and the Sequence of Professional Courts, *vide* Vol. I. Gen. Div., § 54, p. 233.

brings him under the talons of the law. Difficult—because it must be acknowledged that the object of investigation at the time of the granting of the certificate was different from what it was when subsequently examined by the forensic physician, which of course may make a considerable difference in deciding as to the case, not only in acute but even in chronic diseases. It is much more difficult, too, when the forensic physician is unable personally to examine the person referred to, but has to rely solely upon documentary evidence, the statements of the accused medical man, and of the unprofessional attendants on the patient, &c. To this must be added, that when the case is not all too obvious, it will be almost impossible for the revising physician to prove that the accused has acted "contrary to better knowledge;" for where is the measure of that knowledge? Here, then, we come upon a circumstance which considerably lessens the harshness of the penal clause, for the parties accused of falsely granting certificates and for their defenders; and to this may be added another circumstance, which I have learned from experience, I mean the various opinions held by the different legal boards in regard to the interpretation of the statute, an opinion which is often very favourable to the accused, and according to which I myself have seen physicians acquitted (Cases XII. and XIII.) who had granted certificates to pretended patients, whom they had never even once seen. On the whole, therefore, the general effect of these penal clauses is practically somewhat illusory, and only effectual by way of warning.

§ 19. Illustrative Cases.

Case XII.—Pretended Rheumatic Fever, has it been falsely certified?

The practising physician, Dr. X., on the 12th of December, had granted a certificate to a certain Mrs. W., a woman of very ill repute, and who had been often punished, who kept a small tavern, stating that "she is suffering from rheumatic fever and rheumatic swelling of the feet, and cannot therefore appear before the court to-day." The public prosecutor was induced by many suspicious circumstances to regard this certificate as "false," and set forth contrary to better knowledge, and to base an accusation upon § 257. At the time of trial both of the accused appeared at the bar. Dr. X. stated that he had seen the woman W. on the *eleventh* of December in the condition certified, that on the *twelfth* she had sent her maid-servant with

a note and *one shilling* (*sic!*) to him, and that he had granted the certificate on the faith of the servant's description of her condition on that day. His private journal was produced during the trial. But it rather increased than allayed the suspicions, since many illegible figures were entered in it with different inks. During the course of the trial, he explained in regard to the honorarium received by him from his fellow-culprit at the bar, that he frequently took his meals with her, and thus squared off his account (!!) Finally, it was distinctly ascertained that the woman W. had *gone out* of her house on the evening of the *twelfth* of December. The court interpreted the clause of the statute so that the certificate must be regarded as "actually false," and my opinion was asked in regard to it. I stated that a certificate must always be regarded as actually false, when it was not written out in the presence of the patient, or at least on the same day on which the physician had seen him. The state of the patient, as seemed here to have been the case, might be totally different on the following day, and in acute diseases he might even be dead the next day, and in such a case if the physician were to transfer the condition of the one day to the day next following, he would certify that *the deceased* was labouring under such a *disease*, which would certainly be "actually false." Upon this the public prosecutor moved that Dr. X. be sentenced to four, and the woman W. to two months' imprisonment. The court, however, demanded that the public prosecutor should prove that the woman W. did *not* labour under the disease certified on the *twelfth* of December, and as of course this could not be done, both culprits were acquitted! Certainly a most interesting contribution to the efficiency of § 257!

Case XIII. — Pretended Apoplectic Attack, has it been falsely certified?

This case, both in its treatment and result, was precisely similar to the previous one. On the 26th of January a homœopath certified that the host of a small beer and brandy shop "is lying ill in bed, that he has had a shock of apoplexy, and therefore cannot appear in court to-day." In this case, being promptly requested, I was able to examine the "patient" at once, and I found him *on the evening of the 26th* going about his shop smoking a pipe, and perfectly healthy! Nevertheless, the physician accused was acquitted, be-

cause the court was not convinced of his *mala fides*, although it was distinctly ascertained that he had not seen the "patient" on the 26th at all, but only two days previously.

Case XIV.—Whether Fever has been falsely certified?

This was another host of a brandy shop, who, instead of appearing in court at a trial, put in a certificate from a surgeon testifying that he was feverish, confined to bed, and could not leave his room. On the second day subsequently I found N. N. certainly lying in bed and slightly feverish (pulse 92), perspiring gently, and with a dirty tongue. I stated that although the catarrhal complaint of N. was unimportant, yet I could not declare that the day before yesterday he *must* have been in a fit condition to leave his bed and his room, and to appear in court, and this all the more that his statement that he had been already *four days* ill, was by no means improbable. Hereupon the public prosecutor dropped the case.

Case XV.—Whether Irresponsibility at the moment of committing Suicide has been falsely certified?

This was a very peculiar case, and all the more difficult that it had reference to an attempt to determine the mental condition of a man at the moment when he cut short his life by a pistol-shot, by investigating the medical certificate bearing upon it, and that upon the result of this investigation the means of the survivors materially depended. In this case, the Judge charged with the investigation expressly referred to § 257 of the penal code (*Vide* p. 217, Vol. III.), and a question relating to it was referred to us. A man very well-known in Berlin, Councillor E., had shot himself with a pistol on the 27th of June, 18—, during an investigation into the revenue department, of which he was the accountant, and which he had defrauded to the amount of more than 15,000 thalers (£2,250). His widow was a member of two of our widow's fund associations, and in at least one of them, she required in order to obtain the full amount of her pension, in case of the suicide of the husband, a medical certificate of irresponsibility at the time the deed was committed. Such a certificate was granted on the 1st of July, by the (now deceased) Dr. L., who had been the family physician for thirty years. In it he stated that for many years E. had suffered from unusual irrita-

bility, had been almost constantly in a greatly excited condition, and that this at last had passed into a state of frenzy bordering upon insanity, which could alone account for the death; wherefore Dr. L. stated it to be his conviction, "that the deceased at the time when he destroyed himself was in an irresponsible condition."

"Councillor E." we stated in our report, "was a man largely engaged in business, particularly in revenue matters, graced with many distinctions, titles, and orders, and up to the last moment of his life, to which we shall presently refer, no one had ever doubted the perfect integrity of his understanding. How skilfully and adroitly he had concealed the large deficiency which he had indubitably gradually made during the course of many years, is evident from the deposition of the supervisor of the revenue, Privy Councillor N., and this conduct is by no means favourable to the idea of mental derangement. That E. was prepared for a final discovery of his deceit, and, like so many other similar criminals, may have determined voluntarily to put an end to his life when the dreaded moment should arrive, appears probable from the fact that he had caused a pair of pocket-pistols, which had been in his possession since 1848, to be repaired *four weeks previous to his death.* From a change in the parties acting as inspectors the dreaded moment drew near. E. sought in vain to postpone the investigation which had been announced to him, and which was commenced at the hour appointed. At this moment Privy Councillor N. found him at work at his writing-table, smoking a cigar, apparently in his usual frame of mind, and the preparations for the investigation into the revenue department were formally commenced. The second inspector, Privy Councillor J., found him during the investigation calm and unruffled just as he had always known him. Very slily, he knew he had to produce a certain sum which was not at hand as it ought to have been, and with the excuse that he would fetch the sum wanted, which he pretended to have left in an adjoining apartment, he had gone off with an 'at your command'—never to return. The lifeless body was found lying shot in one of the adjoining rooms. Privy Councillor J. is convinced that E., at the moment he committed the deed, acted with 'perfect deliberation,' since he had previously removed part of his dress, and placed it on the table in a certain order. Privy Councillor T. makes a precisely similar assertion in regard to the latter hours of E.'s life, which he had spent along with him in the council on the very evening of the suicide, that E. was then in the complete possession of all

his faculties. Finally, the evidence of one who had been an acquaintance of E.'s for thirty years deserves some attention; he had known him to be a vain, ambitious, and very violent man, but he could never believe in the possibility of his becoming mentally deranged. Even the deceased's own wife and daughter speak indeed of his proud and passionate temperament, but do not go so far in their judicial examination as to assume the existence of mental derangement at the moment of committing the deed. Accordingly, neither in the facts contained in the evidence, nor in the psychological combinations of the whole case, is there the slightest reason for assuming mental derangement, and the irresponsible condition thereby produced, to have existed as a motive for the commission of suicide by E. All that Dr. L. has stated in regard to the temperament and character of the deceased, his irritability and nervous condition, the actual correctness of which is fully confirmed by other witnesses and acquaintances, by no means justifies of itself the conclusion as to a momentary excitement 'bordering upon insanity.' Such a condition of the nervous system *may* indeed lead to mental disease, just as, *e. g.*, a scrophulous condition of the body *may* indeed lead to pulmonary consumption. But as it would be illogical to argue that any one was consumptive, because it was well known that he had always been scrophulous, just as little dare a physician assume from the mere disposition, as evinced by an irritable temperament, the actual occurrence of mental derangement, which can only be shown to exist by a proper consideration of all the circumstances attendant on the deed. In the case before us these were so striking,—the motive to the suicide, dread of disgrace, and the punishment of a guilty consciousness; and every trace of any actual disposition to mental derangement in the previous life so evidently completely absent, the demeanour of E. up to the moment of the commission of the deed so consistent and judicious, that the supposition of his perfect responsibility needs no proof. When I have spoken of an illogical conclusion, I must not be held to assume that any properly-educated physician could be guilty of making such. But it is to be supposed that a physician who has been medical attendant on a family for thirty years has had sufficient opportunity of learning its circumstances. In particular, it is not to be supposed that the circumstances attending the death of E., and which were quite notorious in Berlin the next morning, could have remained unknown to Dr. L. till after the granting of the certificate, that is, for five whole days. He himself has confessed the opposite at his examination on

the 26th of this month. But at the same examination he acknowledges that he had learned from Privy Councillor S. the 'doubtful circumstances' in which E.'s family had been left, and the object that was sought to be attained by his certificate. And though, from the well-known honesty of Dr. L.'s character, it cannot be supposed that he immediately sought to assist a fraud in granting his certificate, yet I lament that in an official report I cannot avoid stating that *probably* a misplaced philanthropy and attachment to a family who had so long befriended him, and who were now involved in unmerited misfortune ('reduced to beggary,' as the widow expresses it), induced him to certify the irresponsibility of the deceased contrary to his own better knowledge. This supposition is not, however, susceptible of strict scientific proof, since the statement of Dr. L. at his judicial examination and his asseveration of the contrary, at once cuts off the possibility of any such proof. When, however, he lays down the dogma that 'the commencement of insanity occurs instantaneously, like a shock of apoplexy, whenever the mind from unexpected joy or terror loses command of itself,' and applies this dogma to the case before us, then he cannot avoid seeing that, according to this view set up by him, but not in the least agreeing with general medical experience, not only this suicide but many other crimes against the person, must be regarded as proceeding from sudden attacks of insanity, an opinion which Dr. L. himself could not admit to be correct." Accordingly I answered the question put to me as follows: "That Dr. L. could have no medical reason for granting the certificate in regard to the mental condition of Councillor E. dated the 1st of July last, and particularly for drawing the conclusion that at the moment of committing the suicide E. was in an irresponsible condition, and that (§ 257. Penal Code) it was to be assumed as *probable* that Dr. L. had granted the said certificate contrary to better knowledge."

In this most remarkable case it was not possible to give a more charitable opinion. The public prosecutor acted not less charitably, for Dr. L. was assumed to be afflicted with "a peculiar ignorance," and not to be guilty of "a scientific deception," and so the matter was allowed to drop.

Case XVI.—A pretended false Life Assurance Certificate.

From among those cases relating to this matter which have come

before me, I am induced to select the following one for relation, because § 257 of the penal code expressly mentions "insurance companies;" because accusations on the part of life assurance companies in regard to medical certificates assumed to be false are of frequent occurrence; and also because the case was difficult enough to decide.

In the medical certificate granted to surgeon S., who died five months subsequently, to enable him to assure his life with the life assurance company M. at G., by Dr. R., and dated the 25th of August, 1851, this physician had declared S. to be healthy, and the assurance "favourable," stating also, however, that S. just then "suffered from a temporary hoarseness of a catarrhal character, that the tongue was somewhat coated, and that he had at present a slight catarrhal cough, with trifling expectoration." In the said certificate it is, however, expressly stated, "the chest and throat are healthy, the complexion is healthy, the respiration is normal, and the circulation regular." On the 26th of January, 1852, the assured died, according to the certificate of Drs. R. and B. of the same date, from "an extensive inflammation of the lungs" with superadded apoplexy, which disease had been induced in the deceased "during last week" by a ride in stormy weather. The result of the chill was "a very violent attack of pneumonia, with considerable dyspnœa and delirium;" and auscultation and percussion revealed "a considerable inflammation of the lungs." After the death of S., a report was spread that he had died of laryngeal phthisis, from which he was said to have suffered for many years, and the company mentioned thought themselves justified in moving for the trial of Dr. R. under § 257 of the penal code, for having wittingly granted a false certificate, and in refusing to pay the sum assured. "In regard to the question put to me," I stated in my report, "I must in the first place ascertain of what disease S. did die. In this respect, however, it is to be lamented, that the documentary evidence contains not one word as to the opening of the body of the deceased, which was probably not performed, and the want of this precludes now, as may be easily comprehended, the giving of any infallible opinion. The certificate of the physicians named is very far from supplying this omission, because though they speak of the results of the physical examination of the chest, they do not describe the nature of these results, so that we have only their *opinion* to fall back upon, that the deceased laboured under inflammation of the lungs. Not a word is said in the certificate as to the amount of

fever present; whether the patient had any pain, and where; whether there was any expectoration, and what it was; whether every position in bed was equally endurable; whether swallowing was difficult; whether fungi were present on the tongue or gullet; whether the skin was dry or moist, &c. Accordingly, I myself, as well as everyone else, am restricted and obliged to rely solely on the opinion of Drs. R. and B., and therefore, presupposing the correctness of the supposed existence of 'a very violent attack of pneumonia,' I must assume that S. died of inflammation of the lungs and there is nothing to show that he died of laryngeal phthisis."

"To this I must add, that 'a journey to the country in stormy weather' in January, and the 'chill' thereby occasioned, are certainly according to experience very likely causes to produce an inflammation of the lungs, and that on the other hand, a violent inflammation of the lungs very frequently proves fatal within six or eight hours, so that the mode of origin and the course of the disease in the deceased are in favour of the correctness of Dr. R.'s diagnosis. Both of the circumstances just referred to would be much more likely to occur in a man who for years had suffered from a chronic inflammation and ulceration of the mucous membrane of the larynx (laryngeal phthisis). According to the testimony of several witnesses, this is said to have been the case with S. What the documentary evidence contains in regard to this may be reduced to the following. The numerous non-professional witnesses examined either know nothing at all in regard to S.'s previous state of health, or their depositions are rather against the supposition of the existence of any chronic disease of the kind, inasmuch as they testify that S. drove through the country in all weathers, visiting his patients, and that they saw him going about his business but a few days before his death. It is true, that we sometimes see consumptive people quite active up to a short time before their death, but it is contrary to experience to suppose that, in so laborious a profession as that of the deceased, a phthisis, which had existed for five years (for the observations of the witnesses extend so long back), would not have made greater advances than seems to have been actually the case here."

The *medical* evidence is of more importance. The district physician, Dr. S., in S., has only 'for long repeatedly *heard*,' that S. laboured under 'laryngeal phthisis,' but he had not seen the man himself for seven or eight years before his death, still less examined or treated him; this evidence, therefore, is not to be looked upon as actually

medical. On the other hand, the district surgeon, R., who had made the statement alluded to by Dr. S., describes the appearance of S. precisely as being such as is usual in phthisical patients. "The whole appearance," says he, "the external organisation of S. evidently pointed out that he was disposed to phthisis. He was thin, slimly-built, with a long neck, projecting larynx, flat chest, and wing-like shoulders, which projected outwards. I have also heard from his maid-servant, that at this time he had a considerable expectoration; this was in the summer, 1851" (that is to say, at the very time the certificate in question was granted). "S. was said to be a great eater, but nevertheless, wasted rapidly. From these circumstances and bodily conditions, I have come to the conclusion that S. laboured under consumption, and I formed my opinion accordingly." In estimating this deposition I have only to remark—besides the circumstance that it is itself in so far suspicious, as R. is stated to live in enmity with Dr. R. the granter of the certificate—that the only fact given in it, namely, the so-called phthisical habitus of S., can only prove that he was predisposed to (laryngeal) phthisis; from this, however, it does not, of course, necessarily follow that this must have, or has developed itself to a fatal disease, since with or without (*vide* above) this predisposition he might previously die of inflammation of the lungs: further, as to what the surgeon R. *heard* from the *maid-servant* of the deceased, that is not of any importance in a scientific point of view.—However, he has further deposed, that he himself has observed that S. laboured under a "chronic hoarseness;" and this statement is of the more importance, that such a hoarseness is an almost constant symptom of laryngeal phthisis, and that the existence of this chronic hoarseness is also confirmed by Dr. B. Dr. B., however adds, that he had not observed this hoarseness to increase during five years, so that he regarded it not as a symptom of laryngeal phthisis, but as the result of "paralysis of the vocal chords." Considering now that cases of such a nervous hoarseness certainly do occur, that also an evident hoarseness in phthisical patients generally indicates a very advanced stage of the disease, and that S. up to a short time before his death, carried on his severe professional labours without any increase of his hoarseness, it appears to me to be only explicable on the supposition that this hoarseness was most probably not a symptom of the existence of (completely developed) laryngeal phthisis in S.—Accordingly I gave it as my opinion in answer to the query put to me, "(*a*) that it is impossible to conclude with any certainty that

the morbid phenomena deposed to on oath by witnesses as having been observed in surgeon S., who died on the 26th of January, 1852, had any connection with the existence of laryngeal phthisis in the deceased; (*b*) that there is no evidence to show that S. has died of laryngeal phthisis;" and with this the accusation of having granted a false scientific certificate was at once dropped.

SPECIAL DIVISION.

PART FIRST.

DISPUTED SEXUAL RELATIONS.

CHAPTER I.

DISPUTED CAPACITY FOR REPRODUCTION.

Statutory Regulations.

General Common Law, § 37, Tit. 1, Part II. *Males previous to the completion of their eighteenth year, and females before completing their fourteenth year, are forbidden to marry.*

Rhenish Civil Code, § 144. *Males cannot marry before completing their eighteenth, nor females before completing their fifteenth year.*

General Common Law, § 669, Tit. 2, Part II. *Even to persons younger (than fifty years), permission may be specially granted by the Sovereign (to adopt children), when from their corporal condition or state of health they are no longer to be supposed capable of naturally begetting children.*

Ibidem, § 695. *Any married person who at or after cohabitation by their conduct shall intentionally obstruct the attainment of the legitimate object thereof, gives thereby to the other party a lawful occasion of divorce.*

Ibidem, § 696. *Any incurable cause of complete inability to discharge the matrimonial duty, even though it have first originated after marriage, also gives occasion for divorce.*

Ibidem, § 697. *The like is the case with any incurable bodily infirmity, which excites loathing and disgust, or wholly prevents the attainment of the object of marriage.*

Civil Code, § 313. *No (married) man can, by asserting his*

natural impotence, deny the paternity of any child (born during the subsistence of the marriage), &c.

PENAL CODE OF THE PRUSSIAN STATES, § 193. *In the case of any wilful ill-treatment or corporal injury, if the person injured be mutilated or deprived of (speech, sight, hearing, or) the power of procreation (or if any affection of the mind be thereby produced), the punishment is penal imprisonment for not more than fifteen years.*

§ 1. IMPOTENCE.

The possibility of naturally completing the act of copulation may be disputed, and become the object of judicial and medico-legal investigation, both in civil and criminal cases. In the first especially in actions of divorce, since the above-quoted regulations of our Statute Book (recently so keenly opposed) present a convenient and often-used handle for at least attempting to procure the dissolution of a marriage grown loathsome, and this by both parties, but especially by the female. But also the regulation of our Common Law (§ 669, Tit. 2, Part II.), quoted above, which affects the right of succession, and in certain circumstances requires testimony of the probability that children are no longer to be expected in any given marriage, for which of course an official medical opinion is requisite, brings us every year several cases for examination. The question of the power of procreation more rarely comes before us as a criminal one; but it sometimes does so in the case of persons accused of rape or incest, who seek to parry the accusation by an assertion of their impotence (Case XXVI.); and still more rarely in regard to those cases coming under § 193 of the Penal Code, when a person injured asserts, that the injury has deprived him of the power of procreation. On the other hand, the other questions coming under this head, to which the expressions of the statutory regulations may give rise, scarcely ever occur in practice. § 696 of the Common Law quoted above speaks of the "discharge of the matrimonial duty" in general terms, without defining the amount thereof! Luckily, amidst the numberless cases which have come before me, there have not been above three or four where women of the lower classes have sought for a divorce on the ground that their husbands were "incapable" of performing "the matrimonial duty" in the measure which they considered necessary, or where men have sought for divorce from their wives under § 695 (*vide* above), while these have parried the com-

plaint with the assertion, that the husband required from them the performance of the "matrimonial duty" to an unjustifiable amount. Law is just as little able to decide in this matter as science. The notorious Queen of Arragon, who ordained by law that the number of matrimonial cohabitations should be six daily, would not find herself (in the North) in unison either with law or science. This smutty question, however, only comes to the cognizance of the forensic physician, when the health of one of the spouses is said to be threatened by the excess, or to have suffered from it, and the medical decision in such a case is not difficult, and is to be given in accordance with general medical principles, and with due regard to the individual in question. Such cases prove, what experience indubitably teaches, in regard to all the other questions coming under this head, and which may serve as an instructive warning for the inexperienced medical jurist, that there is *no* department of forensic medicine in which such *incredible lies* and *shameless assertions* will be made to the practitioners in order to obtain a favourable opinion, as in this. And very naturally, since the result in cases of pregnancy, paternity, or divorce, &c., frequently affects for life the future position of the parties concerned, and also, because the most ignorant non-professional possesses the consciousness that in a matter which never permits of any witnesses, no third party, not even a physician, can come forward perfectly decisively either for or against him. I might fill volumes, if they would be of any use, with the shameless and absurd declarations which have come before me. In one case, a former operation on the genitals was said to have for long rendered impotent the man said to be the father of an illegitimate child, and the still visible cicatrix of the incision, was—the *raphe* of the scrotum! In another, a shameless fellow had shaved all the hair off his pubis, and dared to present himself as improperly formed and impotent! Solely to fulfil the design of this work, to support every assertion made by actual facts drawn from experience, I shall presently relate, amongst the illustrative cases, a few instances of such perfectly baseless assertions.

§ 2. Continuation.—Examination of Both Sexes.—1. The Male.

How are we to examine and determine the power of erection of the male organ, which is necessary for procreation? This question

has from an early period occupied the attention of lawyers and medical men, and in France it gave rise to a judicial procedure, which subsisted till near the end of the seventeenth century, which I shall relate, because it proves at once the importance and the difficulty of the subject. I refer to the matrimonial proof termed *Congrès*, to which all complaining spouses were submitted. After both parties were sworn that they would perform *bonâ fide* the matrimonial duty, and after the experts were also sworn, the married couple were examined corporeally, and frequently quite naked; after this both were put to bed, where they were allowed to remain from one to two hours, when the experts were again summoned, and the woman again locally examined, specially to ascertain *an facta sit emissio, ubi, quid et quale emissum*, and in regard to this a report was then drawn up!! In 1653, a certain Marquis de Langey married a girl aged fourteen, and lived with her four years in marriage. In 1657, the lady raised a complaint against her spouse of impotence, the "Congrès" declared against him, and the marriage was dissolved. This "proven" (!) impotent married a second time one Diana de Montault, and begot seven children with her. This abominable "Congrès" was at length abolished.*—Not less revolting, however, and what is of most importance, not less incapable of proving anything, are all the methods of investigating the power of erection, recommended even by the best of the older Handbooks, such as manipulation, friction, electricity, &c.!! For I do not require to state, that such artificial nervine stimulants might produce an erection, which under the natural circumstances in question would not occur, while it is very possible that in other cases a practice so atrocious, and so re-

* As another proof of the incredible proceedings of the law courts in these matters in olden times, I shall here shortly relate the proceedings in the action of divorce instituted by the Countess of Essex in James the First's time. She wished to marry the favourite of the King, the powerful Earl of Somerset, with whom she had fallen in love, and she therefore raised an action of divorce for impotence against her husband. In proof of her assertion she declared, that after being married for three years she was still a virgin. A jury of peeresses and matrons (*sic!*) were charged with the investigation, which confirmed the statement of the Countess. Subsequently, however, it became known that the Countess had at this investigation *substituted* for herself a young woman of her own age and size!! Her husband, on his part, confessed that he was impotent, though not absolutely so; and, by seven voices to five, it was determined to annul the existing marriage, and permit the parties concerned to enter into new matrimonial arrangements!—*Hargraves' State Trials*, i. p. 315.

volting to the moral feelings, performed by one man,—a strange physician,—upon another would have precisely the opposite effect. But all such methods of examination, which, very properly, have been for ever abandoned, are not only indecent, and incapable of proving anything, but also perfectly superfluous. Because—and I hold this to be one of the most important dogmas in the whole doctrine of disputed procreative power—*the possession of virile and procreative power neither requires to be, nor can be, proved to exist by any physician,* but is rather, like every other normal function, to be supposed to exist within the usual limits of age. A physician cannot, and just as little requires to prove the existence of healthy digestion, for instance. He can rather only prove, that in the case in question the normal degree is not present, when his investigation reveals symptoms which, according to general experience, are known to prove the existence of a diseased or anormal condition of the digestive function. The case is the same with respect to the virile power. The power of the male organ to erect itself, for the reasons given neither can nor requires to be proved. It must rather be presupposed to exist in every male within the natural limits of age (§ 7), for he has been formed by nature to procreate, so long as no reasons can be proved to exist which would prevent it, and upon which a medical opinion of an opposite character may be based. Therefore, the forensic physician must make it a rule to construct all his reports on these cases in a *negative* form, even when the Judge (as is usually the case) puts a positive question, "Does he possess the power of copulation?" and he must therefore answer that, "the examination has revealed nothing which could justify the supposition that the person examined is *not* capable of completing the act of copulation." That the Judge will always be satisfied with this, is, on the one hand self-evident, and I have, on the other hand, experienced it in all the cases in which my opinion was requested. Accordingly, the task of the forensic physician in every case of disputed virility is to ascertain, by an examination of the individual, whether any conditions exist in him which are found from experience to prevent the erection and immission of the penis? Since all these causes in general deprive such a man of the power of procreation, they will require to be considered separately (*vide* § 7). At present, we have only to mention one other general dogma, which is of great importance for the forensic physician in deciding such cases, who cannot be too sceptical after what we have already said in regard to the lying assertions of the parties concerned, and the physiological

correctness of which I am certain that every old and experienced physician is as much convinced as myself. I refer to the dogma, that *impotentia coeundi* in a *healthy* man, that is, that *an absolute incapacity for the work of procreation, is a phenomenon of the rarest occurrence;* by this I do not, however, mean to assert, that the claims which many men sometimes make upon themselves, and even married women on their spouses, in regard to amount of capacity can always be satisfied. This is a question which never occurs in medico-legal practice, either in civil (paternity, &c.) or in criminal cases. Every physician in practice will be often enough consulted by men seeking assistance for their impotence, which they fancy to be absolute; by young men who have read their 'Tissot' and have made themselves unhappy, and by older ones, who, for other reasons, have an evil conscience. But every physician also knows, that these psychical impediments, though they exist and are effectual for a time, are yet by degrees removed, and never result in "complete and incurable impotence." This dogma is especially to be maintained in respect of actions of divorce, because, in an uninterrupted course of carnal cohabitation, an *absolute* and *lasting* impotence in a (healthy) man (within the natural limits of age), is certainly a perfectly uncommon and most rare phenomenon, and the natural desire will always from time to time assert its rights.

It is otherwise with the *relative impotence*, which the Prussian law refers to, when it (*vide* above) speaks of "incurable bodily infirmity, which excites loathing and disgust." That the excitement of the nervous system, which is much more efficacious in exciting and fitting a man for the act of copulation than the mere stimulus of a store of seminal fluid, may be hindered by depressing emotions, hate, aversion, loathing, and disgust to any given female, is just as explicable physiologically as it has been actually proved, and shall not, therefore, be disputed here. The well-known case of Ruggieri, always quoted in relation to this fact, of the young woman whose body was covered with black crisp hair, and whose husband could not, therefore approach her, may serve as an authentic example of this character. But the *forensic* physician must, in such cases of pretended relative impotence, be all the more upon his guard, that his attention will be equally claimed by the most shameless and audacious assertions *in foro* (Cases XXXI., XXXIV., XXXV., and XXXVIII.) and by many examples of the old proverb, *de gustibus*, &c., which will obtrude themselves upon his notice. Rossi, Clarus junior, and

others, saw cases of pregnancy in women with a cloaca formation. I myself have repeatedly had to examine, because of her disputed capacity for undergoing a punishment, a public whore afflicted with an old vesico-vaginal fistula, and whose presence was really sufficient to excite both "loathing and disgust." Another similar, and perhaps uniquê, instance was brought to light by an investigation (according to the former statutes) regarding the concealed pregnancy of a cretinous creature, about twenty years old, who lived in the corner of a small room, squatting upon her deformed and paralysed limbs, gliding out of this corner when she had deposited her fæces beneath her. She was impregnated by a man-servant *a tergo!!*

§ 3. Continuation.—2. The Female.

From the nature of the circumstances, an objective examination into the pretended incapacity for copulation in a female is not only possible but also requisite. Very rarely, however, shall we be conscientiously constrained to assume the existence of any such sterility in a female, without suffering ourselves to be deceived by the assertions of the one party or the other. Such a spasmodic irritability or *hyperæsthesia of the female genitals* as to render the act of copulation impossible, as is detailed in ancient examples (P. Zacchias), seems rather apocryphal. At least, it is certainly remarkable that throughout the entire literature of this subject, which is so rich in material, cases of this character are so rare. A medical man (!) had raised an action of divorce against his young wife for the pretended reason, that whenever coitus was attempted, she fell into such a "convulsed" condition as "to inspire him with loathing and disgust, and completely to prevent the fulfilling of the object of marriage" (§ 697, Gen. Common Law). My examination did not reveal any cause which could lend even the slightest probability to the assertion of the husband, who, moreover, brought this accusation forward for the first time after many years of married life, and who neither as physician nor spouse seemed to have made the slightest attempt to cure these "convulsions," &c., and the citation of these reasons in my report sufficed to nonsuit the plaintiff judicially. Even an unusual *narrowness of the vagina* as a pretended absolute or relative impediment to the act of coition—in which latter case both parties must be examined—is very rare, and cannot be admitted as any reason for female sterility. For, on the one hand, this canal,

like every other canal, is easily capable of being dilated, of which, especially for our present question, the urethra affords a not unimportant example, for it has been frequently erroneously employed by men, and by use has been gradually fitted for perfect coition;* on the other hand, it can be no longer doubted, that the minute quantity of semen necessary to fructify the ovulum may reach the uterus through even a very much contracted vagina, and by means of, if we choose to call it so, a most imperfect act of coition. Hohl † has found the vagina so contracted, and as it were annularly constricted, that the point of index finger could scarcely enter, and yet pregnancy occurred, and the act of copulation had been frequently completed. The same experienced author relates a peculiar cause of contraction of the vagina by a perineum which intruded between the *labia majora*. I myself have in my own practice seen a similar case, in which, after seven years of a childless marriage, the source of obstruction felt by the husband was found to be also a hypertrophied perineum, which was continued upwards over one-fourth of the *labia majora*. A simple incision remedied this, as it may often remedy cases of partial *adhesion of the walls of the vagina*, which, however, does no prevent coition, nor even fruitful coition, in proof of which we have numerous authentic instances of cases of conception recorded. A relative narrowness of the vagina to the development of the male organ has likewise, as well as every kind of *anormal dimension of the yard itself*, been regarded from the earliest times as a cause of divorce.‡ Here female shamelessness has its freest field, and Case XXXVIII. affords proof of the baseless assertions that may be made. But even when there is an actually deficient development of the organ, such as I have often seen in perfectly strong and healthy men, so that in a relaxed condition it only measured from one inch to one inch and a-half in length, this does not in the least prevent the completion of the act of copulation and impregnation, as physiology and experience alike teach us; and the like is to be assumed in regard to too long or too thick a penis. In the first place, there is no dimension that can be called normal for this organ, and the superior consistory of Sweden undertook, in the seventeeth century, a vain and unscientific task, when they attempted to determine these normal measurements, and to use them as a basis for their decision in actions

* Dict. d. Scienc. Med. Tom. xxiv. p. 210.

† Lehrb. d. Geburtshülfe. Leipzig, 1855, s. 263.

‡ Too short a penis may be a cause of barrenness and a reason for divorce, says Zacchias, *Quæst.* pp. 278, 284.

for divorce. On the other hand, it cannot be disputed, that even with too large a penis the semen may be introduced into the female genitals in a perfectly natural manner. When authors, however, have raised doubts as to the maintenance of the health of the female thereby, and have spoken of the dangers arising from blows thus administered upon the vaginal portion of the uterus, &c., these doubts may be allayed by considering that, even a length of from five to six inches is unusual for an erected penis, while the normal length of the vagina is from six to seven inches. An unusually *great inclination* of the pelvis may prove a source of obstruction to the completion of the act in the female, at least in the normal supine position; but this may be remedied by a recourse to the prone position, as I myself have had occasion to remark in the case of a young married couple, who found it quite impossible to consummate their marriage in the usual manner, on account of the skoliotic condition of the woman, and the consequent great inclination of her pelvis, but who were subsequently enabled to beget two children by adopting the prone position. Finally, there remains to be enumerated all bodies which *obstruct the canal,* such as very large condylomatous vegetations, large cystic and other tumours, large prolapsus of the vagina or uterus which have existed for a long time, which all require to be considered and decided upon according the peculiar circumstances of each case, and the power of art to remove the obstruction and remedy the existing incapacity. This is certainly most easily done in regard to all *anormalities of the hymen,* particularly in regard to atresia, and the still more rarely occurring hypertrophy of the membrane, termed the fleshy hymen, in which a surgical must be called to the aid of the carnal operation. All that has been already stated holds also good in regard to the objective, as well as relative obstructions to coitus in the female. The same shameless assertions made by married men, are also produced *in foro* by married women (Cases XXVII. to XXX., and XXXIV. to XXXIX.), and equally by them it will be found that custom, affection, or a feeling of duty will do away with much that is in general recognised as productive of "loathing and disgust." Who does not know many happy married men afflicted with ozæna, sweaty feet, and the like!

§ 4. Continuation.—Anormality of the Genitals.

Coitus and impregnation may be prevented by anormalities of the genital organs, either congenital or the result of disease. The latter,

as phimosis, paraphimosis, large condylomatous excrescences, &c., in man, similar affections in woman, and also congenital affections, do not occur in medico-legal practice, however frequent they may be in actual life, because those affected with them know full well that they would not by means of them attain their end, but that the Judge, or at least the forensic physician, would only refer them to their own medical attendant. But cases do occur of very large scrotal herniæ, old, and for long irreducible, for though they do not occasion anormality of the male organ, yet they may completely enclose it, and I myself have seen cases in which the impossibility of coition was at once apparent from the size of the tumour, which was often as large as a man's hat, and in one case descended as low as the middle of the thigh, and was supported by a bandage resting on the shoulders. I hold it, however, to be necessary to state, that the usual small reducible inguinal herniæ, which are of such frequent occurrence, are also very frequently brought forward by men as pretended causes of impotence, in order to attain their own selfish ends. It is not, however, difficult to decide these cases.

Congenital malformation of the genitals in both sexes are of extremely rare occurrence, if we except the very trifling amount of *hypospadia* in men, marked only by the opening of the urethra close below the apex of the glans, which is of far more frequent occurrence than is generally supposed, and is of no importance in regard to the questions before us. It is different, however, when the urethra opens lower down between the glans and the root of the penis, or even in the raphe itself, or finally, the urethra may be completely slit open. In regard to such extreme degrees of hypospadia, different views have been held by different anatomists and medical jurists; sometimes, the unconditional impossibility of (fruitful) coition has been assumed (Teichmeyer, Hebenstreit, Haller, and others), at others, this has been assumed to be conditional, according to the higher or lower situation of the urethral aperture (Zacchias, Metzger, Rose, Kopp, Henke, &c.). (*Vide* § 5). Another congenital malformation allied to hypospadia, is the opening of the urethra superiorly, either upon the glans or upon the dorsum of the penis, or close to its attachment (*epispadia*, anaspadia). Epispadia is of extremely rare occurrence, and most rare as the sole congenital malformation of the genitals, as it is usually associated with complete division of the urethra, and with a more or less completely rudimentary form of the penis. The more complete the latter malformation is, so much the less fit the indi-

vidual will be for the act of procreation (*vide* § 6). A case of this kind, which may serve as a sample of what has been stated as to the false declarations occurring *in foro*, must not be omitted. In the summer of 1847, I had to examine K., a healthy man, aged thirty-four, on account of a claim of paternity made against him, which he repelled by declaring himself to be completely impotent. The appearance of the sexual organs was most interesting, and as follows: the scrotum was strongly retracted, but on each side there was distinctly to be felt a testicle of the usual size, with its cord; there was a congenital *inversio vesicæ urinariæ;* urine continually flowed, over the bright-red vesical mucous membrane, and when he had recently drunk, a thin stream of urine spirted out from time to time; the penis was pressed quite flat, and was a mere rudiment, one inch in length and one in thickness, the urethra was open, and run like a shallow gutter along the dorsum of the rudimentary organ. K. declared that he had never perceived any erection of this part. Yet *this man* was said to have begotten a child! Precisely a similar malformation, so much so that the drawings of each, which I possess, might pass for representations of the same individual, were observed in 1851, in a stranger, who had married a wife with whom he had lived for several years, but without children.

Congenital malformations of this character pass into so-called hermaphroditism (*vide* § 6).

§ 5. Capacity for Procreation. — Hypospadia and Epispadia.

Procreation presupposes the existence of normal sexual organs, and their normal employment by both parties concerned in the act. But the existence and functions of these organs may deviate within certain limits from the normal, without prejudice to the possibility of a fruitful impregnation. In this respect, we must commence with the slighter malformations, and we have already pointed out (§ 4) that trifling deviations of the aperture of the urethra towards the under surface of the penis, do not present the slightest obstacle to impregnation. The higher grades of hypospadia in males otherwise normally formed, might in earlier times, while the theory of procreation was yet solely confined to hypothesis, have been acknowledged without any limits as to degree as permitting impregnation, because at that time there prevailed the most wonderful theory of an *aura seminalis* or seminal atmosphere, which of itself, and without any assistance

from the actual substance of the semen, could produce pregnancy if it could get into the neighbourhood of the female sexual organs. Even in recent times physicians (Kopp, Heim, Formey, &c.) of no mean reputation have within the first ten years of this century held fast to this ancient hypothesis, and have published *bonâ fide* "cases" (!) of pregnancies the result of the ejaculation of the semen upon the belly of the woman,* without considering that in such matters not the slightest confidence is to be placed in *any* statement of the parties concerned! But in the present position of physiology, and now that light has been thrown upon the mystic obscurity of the doctrine of procreation, nothing can be said in physiology, and particularly in forensic medicine, in regard to an *aura seminalis*, or impregnation without coitus, that is to say, of impregnation *without the introduction of seminal animalculæ into the female genital organs.* It is, however, remarkable and perfectly relevant to the matter in hand, that from another point of view, precisely the most advanced physiologists deny afresh the inevitable necessity of coitus, when by that is understood the usual normal act of procreation for impregnation, and regard the act itself only as a means of facilitating the introduction of the impregnating fluid into the female organs, and which they therefore term "a mechanical contrivance of subordinate value"

* The pamphlet, *Lucina sine concubitu*, mentioned in the preface, is so often quoted by the earlier Handbooks as the "chief authority" for the theory of the *aura seminalis*, that it does not appear superfluous to dispose of this once for all. I possess two copies of this very rare pamphlet, the French and the German translations of the English original which was published more than a hundred years ago. The first is thus entitled, *Lucina sine concubitu, Lettre adressée à la Société Royale de Londres, dans la quelle il est pleinment demontré*, &c. Londres, 1750 (48, p. 12); the German is entitled "*Lucina s. con.*" "A letter addressed to the Royal Society of London, in which it is plainly proved, both from reason and experience, that a woman may become pregnant and produce a child without any assistance from a man. Translated from the English." Frankf. u. Leipzig, 1751 (80, p. 12). The author calls himself *Abraham Johnson*. The pamphlet is evidently a satire on the learned men of the time, particularly upon *Wollaston* and *Warburton*, and particularly on the theory of the former, "that animalculæ are sown abroad in convenient spots, and that these are the fructifying seeds of all impregnations." The author says that he has "discovered a wonderful cylindro-catoptic-rotundo-concavo-convex machine, for collecting the animalculæ floating in the fructifying regions of the atmosphere" &c.! and such a pamphlet as this has been for a hundred years continually quoted as a proof of the possibility of impregnation without coitus!!

(Leuckart). "The facts known in regard to the artificial impregnation of animals," says Valentin,* "teach us that copulation (coitus) is not *a necessary condition for impregnation.* It is merely an expedient selected by nature for bringing together the two different kinds of germs in many animals. . . . The *rigidity of the organ* is not a *necessary condition* for the ejaculation of the semen or for *impregnation.* It only materially favours the act of copulation. . . . Since the seminal stream may describe a tolerable large arc, it may force its way into the vagina, though only the point of the glans be introduced between the lips of the vulva, or if these be separated, in any other manner. And the spontaneous movements of spermatozoa make it possible for them subsequently to reach the cavity of the uterus through its os." Since it has become known, that no great quantity of the impregnating fluid was necessary for impregnation, and that the smallest quantity of semen contained a large amount of the fructifying elements—in the experiments of Prevost and Dumas 0.012 gr. of semen sufficed to impregnate one hundred-and-twelve frogs' ova—since then the question of the relation of the completion of the act of copulation to impregnation, has for forensic medicine acquired quite a different signification. Facts which exist in regard to the power of impregnation possessed by otherwise normally formed men afflicted with hypospadia even in *an extreme degree,* in whom though a natural immission of the penis was possible, yet an equally natural introduction of the semen was impossible, speak in favour of the correctness of the views and observations of recent physiologists; while on their part, these physiological discoveries explain these facts, and—what must always be decisive for the medical jurist—make them credible. Not only do Schenk and Simeon describe cases of hereditary hypospadia, a fact much in favour of the actual paternity of the hypospadiac parent, not only does Schweikhard describe an impregnation by a man afflicted with hypospadia, in whom the aperture of the urethra "was between the origins of the corpora cavernosa and the anterior and superior surface of the scrotum," so that the aperture had "a horizontal direction, and the urine and semen passed through it in a horizontal direction in the longitudinal direction of the penis,"† but Traxel has also recently published a most remarkable case, which his accurate ob-

* Grundr. d. Physiol. 4 Aufl. 1855, s. 817.

† Kopp, Jahrb. d. Staatsarzneik, iii. Frankf. 1810, s. 246.

servation renders deserving of confidence, and which I feel constrained to give in detail.*

An unmarried woman, aged twenty-seven years, who had given birth to a child, asseverated upon oath, that for the last three years she never had carnal connection with any man, but frequently with the unmarried woman, Johanna K., who was formed like a man, and this the latter also confessed. Johanna K. is thirty-seven years old, and her whole habitus is that of a man. She is tall, her muscular fibre firm, her limbs angular; her features manly, her chest covered with hair, and she has no female breasts, her pelvis is narrow. The scrotum is separated into two sacs, in each of which a testicle may be felt. Between these sacs there is a fissure covered with a red translucent cuticle, and in this cleft close to the root of the penis there is an opening the size of a lentil seed, which is the aperture of the urethra. The penis was shorter than in the normal condition, tolerably thick, and unperforated. A round smooth furrow, which exactly represented the half of the urethra split longitudinally, commenced at the opening already mentioned, and coursed along the whole length of the under surface of the penis and the glans as far as the point where the urethral aperture is normally situated. Accordingly, the urethra opens externally immediately after passing through the *ligamentum triangulare*, and is split throughout its whole course along the penis. In the divided urethra, about a line behind the corona of the glans, two small elliptical openings were seen, which might permit the passage of a bristle, and a third similar opening was visible in the same furrow two lines in front of the aperture of the urethra. The child born was very remarkable. It was mature and healthy, but *its sexual organs were fashioned almost precisely like those of Johanna K.* The scrotum was likewise divided into two sacs, in each of which a testicle could be felt. On the situation of the clitoris there was an unperforated glans unprovided with a preputium. The fissure, covered with a reddish cuticle, is as deep as the diameter of the sacs containing the testicles, and where these are mutually in contact, each side is covered with a longish, red, spongy caruncle, which might be regarded as female nymphæ. The urethra opens at the root of the rudimentary penis, immediately after its passage through the *ligamentum triangulare*, and is of the diameter of that of a newborn

* Prager Vierteljahrschrift, 52 Bd. s. 103. Wiener medicin Wochenschrift, 1856, 18.

girl, but without any hymen. The pelvis is narrow and small, the hips not broad. Traxel quite correctly holds it to be indubitable that Johanna K. is a man, and the father of the child, and he explains the possibility of impregnation, by supposing that the three openings, described as situate in the split urethra, are anormally situated apertures of the seminal ducts, or that—which is much more probable—the split urethral canal is so closed during coitus by the posterior wall of the vagina, that the semen when ejaculated would penetrate as far as the os uteri itself.

I know of no example of an impregnation effected by a man afflicted with epispadia; and I have only to repeat that epispadia is in itself a very rare malformation, and almost never occurs alone, that is, simply as an anormal opening of urethra superiorly.

According to the present state of our knowledge and experience, however, the following dogma in regard to capacity for procreation possessed by those afflicted with hypospadia and epispadia, may be laid down, where the formation is otherwise that of a normal male, HYPOSPADIA AND EPISPADIA OF THEMSELVES FORM NO REASON FOR ASSUMING AN INCAPACITY FOR PROCREATION, SO LONG AS IT CANNOT BE PROVED IN ANY GIVEN CASE THAT IT IS IMPOSSIBLE FOR ANY SEMEN TO ENTER THE VAGINAL CANAL, as for instance, when the urethra opens perpendicularly upon the perineum.

§ 6. CONTINUATION.—HERMAPHRODITISM.

STATUTORY REGULATIONS.

GENERAL COMMON LAW, § 19, TIT. 1, PART 1.—*When a hermaphrodite is born, the parents must decide the sex in which he is to be reared.* § 20. *Yet, after having attained the age of eighteen years, every such person is free to choose which sex he shall abide by.* § 21. *The future rights of any such person shall be determined by this choice.* § 22. *Should, however, the rights of any third party be affected by the sex of any such hermaphrodite, he may petition for an examination by any expert.* § 23. *The decision of the expert shall be decisive, even if opposed to the choice, either of the hermaphrodite or his parents.*

A true hermaphrodite, that is, a double set of organs with the functions of both sexes united in one individual; is never found in the human species. Pretended facts of the opposite character to

be found in the earlier writers on the subject are based upon mistakes, which are the more easily understood from the then existing state of science, when we remember that pathological anatomists are not yet agreed upon all questions in relation to human hermaphroditism, upon their best classification, &c. Thus Förster, Berthold, and others, assume the existence of a *hermaphroditismus transversalis*, in which the germ-glands of the one sex are associated with the intermediate and external genital organs of the other, whilst Valentin sees in such cases merely a deceptive indication and similarity of form. When Bergmann says in his excellent treatise,* that all the requisites of a perfect hermaphrodite fitted for the functions of both sexes, the connection of the testicles by means of the *vas deferens* with a penis fitted for coition, and also Fallopian tubes, a uterus and vagina, may be "imagined" as capable of being united in one individual, I will not dispute it. But when Bergmann himself adds, that "such a formation may occur only perhaps once among a billion of men," he gives thereby a decision as to the value of this view in regard to the medico-legal aspects of the query. Moreover, forensic medicine has its own peculiar requirements to maintain, and leaving to pathological anatomists the doctrine of the development of hermaphroditism from the original morphological identity of the organs of both sexes, it has only to consider how to answer in each individual case the forensic questions in regard to the determination of the sex, the rights of marriage, and the capacity for procreation of such pseudo-hermaphrodites, with all that thereon depends for the individual himself. It has to assume as proven, the existence of the by no means small number of cases in which the organs of both sexes are found simultaneously in one individual, a more or less rudimentary penis and a uterus, testicles, and ovaries.† And experience

* R. Wagner, *Handwörterb. d. Physiologie*, iii. ss. 127, 131.

† Siebenhaar, *Encycl. Handbuch der ger. Arznk.* 11, s. 880. Maret in Mahon, *Médic légale*, I. s. 100. Recent cases by Berthold, *Abhdlgn. der Göttinger Societät*, 1845, Barkow in *Casper's Med. Wochenschrift*, 1845, No. 23. The much spoken-of case of Carl Durrgé, published by Mayer, with an excellent account of the dissection (and a representation) *ibidem*, 1835, s. 800. Testicles with *vas deferens*, and uterus with Fallopian tubes (preparation in the Würzburg collection), mentioned by Kiwisch, Klin. Vorträge, II. 3 Aufl. Prag. 1857, s. 393, &c. Cases of so-called "female hermaphrodites" are scarcely known. A penis-like clitoris was only seen three times among many thousand public prostitutes examined by Parent-Duchatelet (*Prostitut. dans la ville de Paris*). There is a description and representation of a case of this kind which was cured by operation, con-

teaches us, that in such cases the male sex almost always predominates, and that so-called "female hermaphrodites" are only extremely rarely observed, and are perfectly erroneously so termed, being only more or less normally-formed women in whom an unusual development of clitoris presents some resemblance to a penis.

The cases, however, which come before the medical jurist concern *living* men, and what in them is evident and can be proved by the senses to exist. Accordingly, besides what has been already detailed in regard to hypospadia and epispadia (§ 5), we have, in each case, to ascertain whether in the malformed scrotum, which, as I myself have seen, by being retracted in the raphe, and by the formation of a false passage, may very much resemble the *labia majora*, one or two testicles exist or not, not forgetting in the latter case the possibility of crypsorchia (§ 7), or whether a uterus is to be felt by an examination per vaginam. A due regard to the general sexual type of the individual is not less important than attention to the formation of the sexual organs. Here I may, however, state by way of warning, that when the individual is already somewhat advanced in years, the general *habitus* may be deceptive. For it is very well known, that old women, in whom the sexual functions have long ceased, very often assume a manly appearance. I have had occasion to observe numerous examples of this in old women who have been long in prison, or in a lunatic asylum; in these the female breasts quite disappear, a beard is developed on the lips and chin, and they acquire a rough and manly voice, so that when lying in bed covered up to the chest, they may very readily be mistaken for a man. Precisely similar observations have been made by physiologists in relation to the animal kingdom. But what is in general to be remarked is, absence or scantiness of the beard, position of hairs upon the pubis (these being in men produced, be it in ever so narrow a streak, towards the pubis, while in women they form an arch, and are confined to the limits of the mons veneris), prominence of the larynx, which is a distinctive mark of the male, the male or female characters of the voice, the presence or absence of breasts, the formation of the pelvis, the general bodily *habitus*, and further, whether the existence of semen in these pseudo-hermaphrodites can be ascertained (from the occurrence of pollutions which may be confessed, or from stains seen upon the clothes, and

tained in a pamphlet (for which I have to thank the kindness of the author). *E. Malvani rendiconto delle ammalate ricoverate nel' ospizizio celtico*, &c. Turin (1839) 4.

which must be examined microscopically), or, on the other hand, whether there is any menstrual flux,—while less stress is to be lid upon the sexual inclinations, since along with this hermaphrodite condition of the body there seems often to coexist a similar, so to speak, condition of the mind, and the being seems to feel neither quite a man, nor quite a woman, as may be easily understood. Marie Rosine Göttlich, decidedly a man, but with truly hermaphrodite external genitals, which I have repeatedly examined,* permitted himself to be constantly used as a woman. As nature has created transitional forms between the strongly-marked characteristics of the opposite sexes, so we have not only mentally womanish men, and manly women, but also quasi-transitional forms of the body; and physiology has to explain why we have men without beards, and with largely-developed womanish hips, and women with undeveloped breasts and with often quite a strong growth of beard, &c. Here we have only to deal with actually doubtful sexual formation. The division and nomenclature of the ancient *medicina forensis, androgyni* or male, *androgynæ* (*gynandri*) or female hermaphrodites, are to be rejected as they betoken nothing actually or scientifically distinct, and besides, the word *androgyni* was used by the ancients in quite a different sense (§ 20). If it be required to determine medico-legally the doubtful and disputed sex of any individual, no systematic classification of hermaphroditic formation, and least of all, any one so superficial and worthless as that referred to, would simplify the diagnosis, which must rather be based upon the individual peculiarities of each separate case so far as these can be ascertained during life. Such investigations may occur, and have now and then occurred, in relation to the decision of certain questions, such as the capacity for marriage of either sex, or the right of succession to any inheritance (such as any title of nobility, or other right of primogeniture, &c.), or (as in a case which happened in America), the power of exercising any political right pertaining only to males (active or passive right of election), &c. The medical jurist will, in such cases, have to determine, whether the individual is to be regarded as a male or female, and he will be required to base his opinions on the criteria just detailed; and there is certainly no other question in which he may be more easily led astray, and none in which error can be more readily excused, since he can only employ, in making his

* *Vide* the description and representation in Casper's Wochenschrift, 1833, I. No. 3.

decision, those appearances visible externally, and not the internal anatomical facts. Carl Durrgé, formerly Maria Derrier, could exhibit quite as large a collection of certificates from celebrated anatomists and physicians in favour of his being a female, as of his being male.

§ 7. Continuation.—1. Incapacity for Procreation in the Male.

It is self-evident, that all that has been stated in the foregoing paragraphs in regard to the conditions causing incapacity for coition, also cause incapacity for procreation, but not the reverse. For most of the cases which occur are precisely those in which, while there has been actual sterility, especially in marriages which have lasted many years, coitus has yet been perfectly normally carried out by both parties. It is most extraordinary, that, according to my experience, the law takes no cognizance of this important distinction in regard to disputed capacity for procreation, especially in cases of affiliation, and in such cases, merely requires the expert to ascertain that the man is not incapable of performing the act of coition, the presupposing, as it were, in the case of an affirmative answer, the existence of the power of procreation. It is, however, the duty of the physician, on suitable occasions, to set the Judge right in regard to this, and to point out to him when the case in hand requires it, that there are not a few obstacles to the fruitfulness of the act of coition.

In the first place, the capacity for procreation in a man presupposes the existence of *testicles*. The duplicity of these organs is a luxury of nature,* since we do not now-a-days require to state that the possession of but one testicle (monorchides) is perfectly sufficient for procreation—I need not add, for the procreation of both sexes!! —as I myself have had occasion to observe in the case of the husbands in two marriages, which were very successful in this respect, and as indeed is no longer in any danger of being disputed. The position of the testicle in the scrotum is just as little necessary as its duplicity. Sixtus the Fifth declared in 1587, in a circular letter to his nuncio in Spain,—probably not without first getting the opinion of experts on the matter,—that all men whose testicles were not to be felt, were to be forbidden to marry; and in 1665, the

* The "supernumerary testicles," described by the earlier writers, rest, according to Förster's certainly more correct opinion, upon inaccurate observations.—Handb. d. spec. path. Anatomie. Leipzig, 1854, s. 249.

Parisian parliament still acted in accordance with this canonical regulation, which must have affected not a few men in a most unjustifiable manner. Since, though in those cases which sometimes occur in which the testicles lie close in front of the abdominal ring, they can be readily perceived there, this is not the case when they maintain their original position in the abdomen (*Crypsorchides, Testicondes*). Experience proves that crypsorchides are perfectly capable of procreation,* and there are, *à priori*, no physiological reasons for doubting this.† In such cases, when this power is disputed, and these are so extremely rare that none have come before me, since crypsorchia cannot be ascertained or proved to exist during life, all the other characters of virility must be the more carefully tested. One of those idle subtleties of which ancient forensic medicine was so full, was, the question whether a man deprived of both his testicles is still capable of procreation shortly after his castration? Irrespective of the fact, that every system of laws, since the Roman one, has laid down limits for the duration of pregnancy (paternity), from which those castrated are not exempted; consequently, when a man, who has been castrated, completes the act of coition shortly after the operation, when the woman declares herself to be pregnant in consequence, and when the birth follows within the legal period (§§ 29, 30), the man who has been castrated will in general be presumed to be the father, without any appeal to the opinion of experts. There are also other reasons why this seems to be an idle question. It cannot be doubted that those castrated are not at once rendered impotent. Peter Frank (medical police) relates the case of four (castrated) soprano singers, who were guilty of so many sexual misdemeanours with women in a small Italian town, that they were banished from it. Sir A. Cooper‡ knew a man in whom both the testicles had been extirpated for twenty-nine years. During the first twelve months this man, according to his own statement, when satisfying his sexual desire had ejaculations, or *at least the same feeling*, as if these had occurred. Subsequently, he had erections, though but rarely, and

* *Vide* the case of a most licentious criminal who was executed, dissected and found to be a crypsorchide, related by Mahon, *op. cit.* p. 57.

† E. Godard, *Recherches sur les monorchides et les crypsorchides chez l'homme*, Paris, 1856 (Virchow, Archiv, &c., xii. 1, s. 128), bases his doubts upon the little credit to be placed in women in these matters.

‡ Observations on the Structure and Diseases of the Testicle. London, 1830.

satisfied his sexual desire without any feeling of ejaculation; after two years the erections were more seldom and less perfect, and they ceased at once on his attempting coitus. Ten years after the operation, he told Sir Astley that during the past year he had been able to satisfy his sexual desires only once. Eight-and-twenty years after the operation, he stated that for many years his erections had been but seldom and imperfect. For many years he had rarely sought to satisfy his sexual desires, and then without result, and only once or twice he had libidinous dreams, without any ejaculation. A still more striking instance is detailed by Krahmer.* A young man, aged twenty-two years, cut off both his testicles and epididymis with a razor. During the night, between the eleventh and twelfth day, he had an involuntary seminal emission. Since then (that is for eighteen years) the sexual power of this man has entirely ceased.— Supposing, however, that a man recently castrated, who is still quite capable of coition, may possibly beget a child at his first coitus, by means of the spermatic fluid still remaining in his seminal vesicles, we must still consider the long illness which the castrated individual has to suffer after the operation, the troublesome bandages, the low diet, &c., and we are not likely to err in thinking that his sexual appetite is not likely to be much excited during the first few weeks, and that probably before this happens nature will, as in the case just related, get rid of the superfluous spermatic fluid by involuntary emission. Moreover, there is also this other important consideration, that castration in by far the largest proportion of cases presupposes a long-continued disease of the testicles, which must have long since made these organs unfit for the discharge of their function. All these facts and reasons justify the conclusion, that the question of the possibility of those castrated being able to procreate is *not of the slightest practical importance.*

But the existence of testicles is further only a condition necessary for procreation, in so far as they are the organs which prepare the semen, and this is a function not performed by them at all times, nor under all conditions; it is physiologically confined within certain limits of age, and it is pathologically prevented by certain diseases to which these organs are liable, among which may be reckoned carcinoma, atrophy, cystosarcoma, tuberculosis, and enchondroma. To this category also belong the diseases which pathology reckons as appertaining to the seminal vesicles, chronic inflammation with

* Handbuch der ger. Medicin. Halle, 1851, s. 276.

hypertrophy and suppuration of their walls, tuberculosis and carcinoma. The physiological obstacle of *unfit age* is of much more frequent occurrence than any pathological one, and it is much more difficult to give a decisive opinion regarding it, when it is asserted *in foro*. Though in general no difference is made in this respect, and the period of puberty is only spoken of generally as that of virility, yet it is certain that the power of coition begins earlier, and ceases later than the power of procreation. P. Zacchias*, the Roman, states that the former commences at the twelfth, the latter at the fifteenth year, and that the *potentia coeundi* ceases at the seventieth year. In our northern climate, at least, these periods must be extended, and the power of coition in young men must be dated from about the thirteenth, and the power of procreation from the fifteenth to the sixteenth year, while it cannot be asserted as a rule that the latter ceases with the seventieth year. In stating this, I place no value on the numerous published cases of unusually early or unusually late paternity, of procreation at the age of twelve, or of ninety-six, one hundred, one hundred and fifteen, and one hundred and eighteen years,† because these cases cannot stand before criticism, which it is nowhere more strictly requisite to attend to than in this department of forensic medicine. But it is a more important fact, that Duplay found that the semen contained spermatozoa in thirty-seven cases out of fifty-one old men, nine of whom were more than eighty years old,‡ while I myself have repeatedly observed the same in men at the end of their sixtieth year (§ 16), and I shall presently quote a case in which spermatozoa were observed in the sixty-ninth year of life. As, however, in regard to each individual case in which this question is forensically raised (*vide* Cases XXII. to XXIV.), the variations in regard to the age during which capacity for procreation exists of themselves present considerable difficulties, so these are increased by the numerous differences created by individual circumstances in regard to the usual limits of variation. It is generally known, that a sedentary mode of life, pampering, excitement of the imagination, nourishing and heating food, &c., favour and hasten sexual development, while ætiological circumstances of an opposite tendency retard it, as well as that bodily disease and debility, excess *in venere*, &c., diminish or destroy the capacity for procreation, while the opposite

* *Quæst.* p. 267.

† *Vide* a list of quotations by Siebenhaar, *loc. cit.* s. 609.

‡ Valentin. Grundr. d. Physiol. 4 Aufl. 1855, s. 802.

conditions may long preserve it. All these circumstances must therefore be taken into consideration along with the period of life, which is the most important condition, in deciding this point in any given case. The medical jurist will thus indeed be often enough thereby placed in such a position that he must declare the possibility of procreation in half-grown lads or old men, even though his own moral conviction, which, however, he must always suppress, should force upon him the strongest reasons for doubting the pretended paternity. In two such cases I was compelled to assume the capacity for procreation as possible in two young men, of whom the one was thirteen years and ten months old, and the other fourteen years and two months, both were, however, unusually early *perfectly* developed, and both were employed independently in the business of their fathers, although in both cases the women pretended to have been got with child by them were notoriously immoral wenches! (*vide* also Case XXII.). Case XXIV., detailed below, respecting a man aged seventy-four years, was of much the same character.

§ 8. Continuation.—2. Barrenness in the Female.

In the same degree and with similar powers of expansion as those detailed in the foregoing paragraph, the limits of the duration of female fertility are capable of being more accurately determined than those of the male, since nature, by means of menstruation, which is the visible token of the separation of the germ from the ovary, and the cessation of this process at a more advanced period of life, has set evident limits to this capacity; while the mere capacity for copulation never ceases during life in the female in her general normal condition (§§ 3 and 6). With due regard to the accidental differences already referred to, the commencement of the procreative power in girls in our climate may be dated from the thirteenth to the fifteenth year, and its cessation from the fiftieth to the fifty-second year. Dunlop, the editor of the English edition of Beck's Handbook,* saw in Bengal, "occasionally a mother under twelve years of age," and states for certain that similar cases are sometimes found among the factory girls in the large cotton factories of Manchester and Glasgow, who work in rooms at a very high temperature, and who live in the most demoralising circumstances. This is credible, whilst the many cases reported (by Siebenhaar, &c.) of women who have produced

* Elements of Med. Jurisprudence. London, 1825, p. 83, *note*.

children at the age of sixty or seventy years must give rise to the liveliest doubt. Devergie (*Med. légale*, I., p. 435) relates that a man whose title to an inheritance, as heir to his mother, was disputed, in the year 1754, on the ground that his mother could not have been the legitimate heiress of the party through whom the claim accrued, because her alleged mother was fifty-eight years old at the time of her birth, took counsel with the Academy who from the "Annals of Medicine" produced the following cases in his favour: "Cornelia, of the family of the Scipios, bore a son at sixty years of age. Marsa, a physician in Venice, erred in regard to the pregnancy of a woman aged sixty years, whom he thought to be labouring under dropsy. Delamotte quotes the case of a maid aged fifty-one, who became a mother, she having never married from the dread of having children. Capuron says that, in Paris it passes for true (*sic!*) that a woman in the street *de la Harpe*" (those acquainted with Paris well know the class of people living there, small shopkeepers, tradesmen, and the like) "gave birth to a daughter at the age of sixty-three." Are these observations possessed of the slightest scientific authenticity? I have already stated (§ 1.) that every year cases come before us in which it is judicially inquired, whether an aged woman in her present marriage, or in a second one about to be entered into by her may yet probably have children? Usually these are women approaching their fiftieth year, if they are not already far beyond it, and who have for long ceased to menstruate. Care must be taken to observe whether in such women the usual general proofs of commenced or already advanced decrepitude are present, an aged look, disappearance of the subcutaneous fat, withered, more or less completely absorbed breasts, and wasted thighs, and then taking into consideration these phenomena, along with the actual age, we may arrive more or less certainly at the conclusion that heirs of the body are no longer to be "expected" from this woman (General Common Law). I know not whether the medical jurist be subject to an action for damages in case the result should prove his opinion to have been erroneous, and the woman should yet become pregnant, but I do know for certain, that by a careful consideration of the foregoing circumstances, I have not as yet been placed in such an unpleasant predicament in any of these cases.

I have already mentioned the natural cessation of menstruation. But any mere *anomaly in menstruation* of whatever kind, such as its non-occurrence, its premature disappearance, its cessation for years,

or extremely irregular occurrence, deviations in quantity or quality, &c., can never be admitted as a reason for assuming the sterility of the party affected. Because many undeniable instances of the occurrence of pregnancy under all these circumstances have been recorded,* and they are also easily explained physiologically. For the hæmorrhage is not the most important circumstance in menstruation, this "rutting time of the human female," but the evolution of the Graafian vesicles, the periodical maturation and separation of the ovum, combined with an orgasm of the internal genitals, which, as a rule, is accompanied by uterine hæmorrhage. And that the source of the menstrual flux is the uterus, in proof of which one solitary dissection by Mauriceau is generally quoted, in which he found the inner lining of the uterus stained with blood in a female criminal hanged while menstruating. I might, were such proof still necessary, relate many cases of medico-legal dissections, made by myself, of women who had met a violent death while menstruating, and in whom the bloody secretion of the lining membrane of the uterus is constantly found.

A woman must be sterile, 1. when the external or internal sexual organs are wholly wanting. Complete absence of the vagina is, however, just as rare as complete absence of the uterus, and is usually combined with other malformations of the internal and external genitals.† 2. When the organs of generation, like every other organ, are rendered by disease incapable of performing their natural function. It is true, that inability to conceive is not the result of every disease of the uterus and ovaries, for instance, polypi of the uterus or scirrhus and carcinoma of its vaginal portion do not produce absolute sterility, but this is the result of hypertrophic or atrophic degeneration of the parenchyma of the uterus or of the ovaries, hydrovarium, &c. 3. When the spermatic fluid is prevented from reaching the ovulum. This of course includes all those causes which render coition impossible (§ 3), likewise all bodies which occlude the upper part of the vagina (tumours, pessaries which have become incrusted or in any way rendered immoveable and incapable

* *Vide* Romer's remarks on § 494 of *Metzger's System*; Mongiardini in *Harles u. Ritter Journal d. ausl. Liter* V. 2; Meckel's *Archiv f. Physiol.* Bd. iv. and viii.; Flechner in the *Œsterr. Med. Jahrbücher*, Bd. xxx. N°. 4. I myself have seen a strong, healthy peasant, aged thirty-two years, who during her married life had already given birth to three children, without ever having menstruated. This case was not forensic; lying and simulation were therefore out of the question.

† Kiwish klinische Vorträge, ii. 3 Aufl. Prag. 1857, s. 373.

of being removed without assistance); adhesion or contraction of the external or internal os uteri, which is often so considerable as to prevent the entrance of any but the finest probe; complete stuffing of the uterus with tumours, adhesion of the Fallopian tubes, &c. It is also worthy of remark that, according to the observations of our Berlin obstetrician, C. Mayer, a man of very large experience, anteflexion and retroflexion of the uterus form a relatively very frequent cause of sterility,* probably on account of the obstacles thus presented to the flow of the spermatic fluid, for Mayer found (*op. cit.*) that ninety-seven out of two hundred and seventy-two, that is more than one-third, women that were barren laboured under flexion of the uterus. In a medico-legal point of view, however, it must be remembered that many of these asserted causes of sterility either cannot be diagnosed at all with any certainty during life, or only with great difficulty, that others are only transitory and curable, and that consequently the possibility of the restoration of the power of conception is involved in the possibility of removing the obstacle to conception, and further that, as experience has taught me, all these causes of sterility just related are scarcely ever brought forward *in foro*, and the obstacles to conception most generally alleged are purely individual. Such as the already referred-to pretended "inconquerable disgust" to the husband in actions of divorce, which is often sought to be sustained by the most absurd reasons; the pretended complete absence of pleasurable sensations in the act of coition, which is of no importance in regard to this question (*vide* § 17, *sub* 3), &c. In all allegations respecting purely psychical causes of sterility, the utmost caution must be exercised in coming to a conclusion, because these allegations are wholly insusceptible of proof, and just for that reason are often wholly imaginary; and further, because daily experience teaches us that all purely psychical causes of (relative) sterility, even when true, are like all other mental dispositions, frequently removed by the mere lapse of time. In the married life of the lowest classes much cruelty, arising from unnatural hate, is often observed most charmingly combined with numerous impregnations!

Other alleged causes of sterility, such as P. Zacchias' assertion that coitus in the standing posture prevents conception,† or what is stated by Hohl,‡ as to the escape of the spermatic fluid from the vagina after coitus preventing conception, are of no value in relation to medico-legal cases, on the one hand, because no proof of

* C. Mayer, in Virchow's Archiv f. path. Anat. 1856, Heft. 1 and 2.

† *Quæst.* p. 632. ‡ *Op. cit.* p. 129.

their truth can be obtained, and on the other because physiology is opposed to their correctness, since it is quite possible for the extremely small quantity of spermatic fluid necessary for impregnation (p. 249, Vol. III.) to get into the vagina, whatever the position during coitus, provided there be no obstacle to prevent it.

The penal code (*vide* p. 238, Vol. III.) speaks also of the "deprivation of the power of procreation." But this subject will be returned to by and by (§ 47).

§ 9. Illustrative Cases.

Cases XVII. and XVIII. — Whether two Spouses are still within the Procreative Age?

According to a testamentary disposition, a married couple were to receive the whole of a capital sum, the interest of which they had hitherto enjoyed (in favour of any future children), whenever children were no longer to be expected from them. This was the cause of the medico-legal examination. The husband was a physician of seventy-three years of age, his youngest child was begotten twenty-seven years previously. "He is a feeble man, almost toothless, with grey hair, a large scrotal hernia, and the appearance of complete decrepitude. His own statement, that for years he has had no involuntary nocturnal seminal emissions, seems therefore to be perfectly credible." "As, however," I went on further to state in my report, "isolated instances of procreation by men of more advanced age have been observed, so in cases like the present, when the age alone is a matter of doubt, absolute impotence must only be assumed with the utmost caution. I must therefore state that Dr. X. will most probably never beget any more children, and in respect of his present marriage, he must be regarded as perfectly impotent. For his wife is sixty-three years old, and her appearance agrees therewith. At the age of forty-five, that is eighteen years ago, she says that she ceased to menstruate, which is not improbable considering her seven confinements and the fact that this function commenced with her at a very early age. Mrs. X. is, moreover, a feeble, decrepit woman, who has not conceived for twenty-seven years, and I have no hesitation in declaring that she is no longer capable of conceiving. And in regard to the marriage of both the parties examined, I declare it to be my opinion, that no more children are to be expected from the union of Dr. X. with his present wife.

Case XIX and XX.—A similar Case.

A similar decision had to be given in another case, in which § 669 of the General Common Law, detailed above (at p. 237, Vol. III.) came in question, as the married couple, who had not attained fifty years of age, desired to adopt a child. The husband was forty-eight years old, of good bodily health, and perfectly normal sexual organs, and had of course to be unconditionally declared as not incapable of procreation. His wife was forty-nine years old, and had ceased to menstruate for three-quarters of a year, after a long period of irregularity, as is frequently the case; her muscular system was relaxed and withered, her breasts had half disappeared, and these circumstances, coupled with the fact that this couple had been married for nineteen years without having any children, decided me in stating that no children were now to be expected from this marriage.

Case XXI.—Disputed Inability to Conceive.

I give this case, which occurred in a matter of trusteeship, not only because it is peculiar in itself, but also because it was the occasion of a query in rejoinder on the part of the Judge. The question put was, "Is the Widow E. still capable of bearing children?" She stated to me that she was fifty-five years old, that she had ceased to menstruate for ten years, and that having given birth to nine children in the first ten years of her marriage, she had not again conceived during the last eight years of its subsistence. The *labia majora* were shrivelled, the vaginal portion much shortened and atrophied, and the breasts were withered and wrinkled; on the other hand the general appearance of the woman was comparatively unusually fresh, the pigment of the hair, and all her teeth were well preserved, and she looked like a woman of not more than forty-six or forty-eight years old. In accordance with all these circumstances I did not hold myself to be justified in saying more than that it was "almost certain" that the Widow E. was no longer capable of bearing children; whereby I may remark that the mode in which the Judge had put the question required a categorical "yes" or "no" in answer, and not simply the expression of an anticipation or supposition. In truth, my "almost certain" was not enough in this case, and the baptismal certificate of E., and certificates from two of her

physicians were sent to me, which completely confirmed her statements as to her age and previous conceptions, &c. After giving my reasons, I no longer hesitated to pronounce this woman as certainly incapable of any future conception.

In a multitude of analogous cases of women proved to be more than fifty years of age, all of whom had either never conceived (one of them during thirty years of married life), or had not done so for many years, had ceased to menstruate for a long time or for many years, and displayed the general characteristics of decrepitude, it was always positively decided that they were no longer capable of bearing children.

CASE XXII.—CAPACITY FOR PROCREATION DISPUTED ON ACCOUNT OF YOUTH.

The question was whether the gymnasiast, N., whose father objected to a charge of affiliation laid against his son, had been capable of procreation in the period between January and the 26th of March, 18—? I had to make the examination on the 28th of June of the following year, that is just one year and three months from the latest time. The young man was a Jew, plentifully supplied with black hair, and just sixteen; consequently on the 26th of March of the previous year he had been only *fourteen years and nine months old:* he was strongly built, and in perfect health. His beard was just beginning to grow, but his voice was manly. His penis was large, perfectly normal, the hair on the pubis was copious, and his testicles were fully developed. I did not enter into any subjective particulars such as sexual inclinations, pollutions, &c., because I was not likely to be told the truth, and I declared "that nothing had been ascertained at the examination which would confirm the statement that the person examined had been *incapable of procreating* on the 26th of March of last year."

CASE XXIII.—CAPACITY FOR COITION AND PROCREATION DISPUTED ON ACCOUNT OF AGE.

Although the Court of Divorce, in an action against a master tradesman, laid before me the *positive* inquiry, "Is X., by reason of his present age, fifty-seven years, rendered incapable of coition and procreation?" I nevertheless answered it *negatively*, for the reasons

already given (§ 2), and yet the answer was, as in every other similar case, perfectly satisfactory to the court. The man was only fifty-seven years old, was therefore still within the limits of the procreative age, perfectly healthy, had a beard, a manly voice, a manly frame and habitus, a perfectly normal penis of medium size, and well-developed testicles in his scrotum. Accordingly I declared that "there was no reason to assume that X. was incapable of coition and procreation."

Case XXIV.—Capacity for Coition disputed because of advanced Age.

A very peculiar case. In an action for affiliation, T., a gentleman living on his private means (!), was declared by an unmarried woman to be the father of her children, one of whom was born on the 10th of November, 1848, and the other on the 4th of November, 1850. The defendant stated, in reply, that he was not only at present "perfectly incapable of performing coition," but that he had been so previous to the year 1848. The court, in its requisition to me, stated that "to decide this action it is not of so much importance to ascertain whether the defendant has been capable of a fertilizing act of coition, that is, of an *ejaculatio seminis*, but only whether previous to the 30th of January, 1848"—(the two hundred and eighty-five days prescribed by law in regard to illegitimate births, *vide* § 25)—"it was likely, from the bodily condition of the defendant, or any other cause, that his male organ was capable of erection and immission into the female vagina, or whether circumstances exist which justify the supposition that the defendant was already in such a condition, previous to the 30th of January, 1848, which would render erection and immission of his penis impossible?" The action was already pending in the Court of Appeal in which the defendant claimed to refer the matter to my decision, no easy task considering the nature of the query put. T., whom I examined on the 4th of April, 1853, was precisely on that day—*eighty years of age*. "Consequently," as I stated in my report, he was upon the 30th of January, 1848, *seventy-four years and nine months old*. According to his own statement he has never been seriously ill, and he is still comparatively healthy considering his advanced age; he has a fine and powerful constitution, a healthy complexion, and his respiration and heart's action are quite normal, &c. *Blindness*, from cataract, which necessitated a (success-

ful) operation, and a slight *swelling* of the legs were of no importance in regard to the present question. In respect of T.'s sexual capacity I may remark, that in two marriages he had begotten three children —the last of them forty years since,—and that his genitals were perfectly normally formed, his penis largely developed, and his testicles perfectly healthy to the feel, and also that he had no large scrotal hernia, &c. Though it is generally unusual for a man of seventy-five to be quite capable of coition, yet individual instances of capacity for coition, and even for procreation, even at such an advanced period of life, have been too often authentically observed to permit the unquestioned assumption of 'impotence.' I cannot, however, omit to point out that examples of this kind can only be regarded as authentic when there is no suspicion of deception, that is, when the course of life of the spouses place them above any suspicion. And in this respect I may further remark, in a medical point of view, that in a married cohabitation between an old man and a woman still capable of conception, the period favourable to conception may be waited for, and, after many fruitless attempts, may at last arrive. In pretended illegitimate pregnancies the conditions present are perfectly different, presupposing that there is no actual concubinage between the parties. When T. told me, by the way, and solely with the intention of exhibiting the character of the woman he was said to have impregnated, that she had once given him a kick upon the belly; presupposing the truth of this statement, such a circumstance would in general be little fitted to increase the capacity for coitus of a man of seventy-five. Having regard to all that has been stated, I must declare my opinion in relation to the question put to me to be, that it is in the highest degree probable that the defendant was already previous to the 30th of January, 1848, in such a state of body as to make an *erectio et immissio penis* impossible."

Case XXV.—Disputed Capacity for Procreation.

In another case of affiliation, the question was put to me, "Does the journeyman shoemaker, E., labour under actual impotence and complete incapacity for procreation, or can it be ascertained from the condition of his body that he was impotent at the time when he is stated to have had illicit intercourse with the pursuer, that is during the period between the 8th of September and the 22nd of November,

1837 ?" The statement of the defendant was wholly without foundation. He was certainly a pale sickly-looking man of (at the time of the inquiry) forty-eight years of age, consequently within the limits of the procreative age, yet, as he stated to me, he had been twice married and had lived childless with his two wives for a period of twenty-one years. He declared that in his youth he had been " at least ten times" infected with gonorrhea, and that especially during the last eight years he had neither had erections nor pollutions. No value could be placed on any of these statements, since I had no proof of their truth. He had, moreover, a moderate beard and manly voice, plenty of hair upon the pubis; the size of his penis was moderate, but quite sufficient for procreation; the foreskin was quite moveable, and the aperture of the urethra normal; in the wrinkled scrotum there lay on the right side a tolerably small testicle, and on the right side one considerably larger, which together with its cord presented nothing morbid to the feel; there was also no symptom of paralysis or general nervous debility. Accordingly it must be decided " that that there was no evident reason for assuming that E. was labouring under actual impotence and complete incapacity for procreation, and that it could not be ascertained from the condition of his body that he had been impotent during the period between the 8th of September and the 22nd of November, 1837."

Case XXVI.—Impregnation of a Man's own Daughter disputed on the ground of Impotence.

In this horrible accusation of incest the master tradesman, N., at that time *sixty-three years* old, was charged with having *begotten five children* out of his own daughter, whom he continually most jealously watched! He appealed to his age, and a previous venereal infection, both of which causes had made him impotent for more than ten years. He was of a small compact build, brunette colour, and appeared old indeed, but still younger than he was. His head, face, and pubis were plentifully covered with black hair. His voice was manly, his penis of unusual size, and there was not the slighest deviation from the normal in his genitals. A fine cicatrix of an incised cut, certainly permitted the conclusion to be drawn that a bubo had formerly existed, but this was of course quite unimportant for the present inquiry. The report, which was fully reasoned out, concluded with this opinion, " that the medical examination has revealed

no reason that could justify the assumption that N. has been for ten years incapable of performing the act of coition and of begetting children."

Cases XXVII. to XXX.—Accusations of Impotence by Wives against their Husbands.

XXVII.—The married woman, R. asserted that her husband could never during their married life "produce a proper erection of his male organ, or an ejaculation of semen," and claimed a divorce. R. disputed this, and declared that during the last five weeks he had twice "fully completed" the act of coition with the complainant. I give this and the following cases, in themselves quite simple, only as actual proofs of the shameless assertions I have already stated (p. 239, Vol. III.) to be frequently made in this matter. R. was fifty-two years old, but from exuberant health seemed much younger. All the characters of manhood were present in their normal amount, and I had to declare "that there was no reason to doubt the ability of R. to perform the act of coition."

XXVIII.—The married farmer, E., also raised an action of divorce against her husband, on account of inability to discharge his matrimonial duty. E. is just forty years old, of small but compact growth, he has a beard, male voice, strong growth of hair on the pubis, perfectly normal genitals with unusually large testicles, and perfect health! Decision as in the former case.

XXIX.—The married tobacconist, M., sued for divorce from her husband, who had become impotent from excessive onanism. He is forty-eight years of age, and—we said—his perfectly sound bodily condition and vigorous health do not evince that he has or does practice excessive onanism; he has also a perfectly normal and manly-built body, which does not exhibit a single appearance that could justify the opinion, that M. is incapable of procreation or matrimonial congress.

XXX.—The wife of a journeyman tailor, G., brought a precisely similar accusation against her husband. She declared that by "excessive unnatural indulgence of his lust previous to marriage, he had rendered himself impotent," that, therefore, even on the bridal night, and also subsequently, he had attempted to induce her "to allow him to satisfy his natural desires between her nates," &c. The whole accusation of impotence was in this case also without foundation!

The vigorous husband was just forty-two years of age, was generally of a manly build, and had perfectly normal and healthy genital organs, so that the same decision had to be given as in the previous case!

Cases XXXI. to XXXIII.—Complaints of Refusal to Perform the Matrimonial Duty.

XXXI.—Curious bubbles are thrown up from the low-life of large towns. In the Z. action for divorce, the woman sued for divorce because her husband during the four years their marriage had subsisted had never had matrimonial connection with her, in proof of which she asserted—that she was still a virgin. The latter fact was all I was required to determine, and I found that this *eight-and-forty years old hump-backed woman,* who had married a man now only *twenty-eight years of age* (on account of a few hundred thalers [100 thalers = £15 sterling] possessed by the woman), had actually a perfect hymen, neither dilated nor torn, so that I had to declare, "that perfect coition with actual immission of the male organ had never been performed on the woman, Z."

XXXII.—The P. action for divorce presented a precisely similar case. The woman sued for divorce because of refusal to perform the matrimonial duty. The man asserted, that his wife laboured under "a complete and incurable incapacity" (§ 696 of the Gen. Com. Law, *vide* p. 237, Vol. III.), and that it was impossible for him to have intercourse with her. The man was twenty-eight years old, the woman fifty-one, and they had been married for three years without children, but the young man had deserted his old wife just three months after the marriage!! I found the latter still a virgin, but perfectly normal and healthy, and the assertion of the husband was utterly baseless.

XXXIII.—This case was just the reverse, for the victual-dealer, K., brought an action of divorce against his wife, on account of her obstinate refusal to perform the matrimonial duty; the woman on her part asserting "that she suffered from a rupture, and that her bodily condition was such that she could not, at least without danger to her health, permit the consummation of matrimonial intercourse." There was on her left side a femoral hernia the size of a walnut, quite replaceable, and scarcely visible in the supine posture. There was just as little reason for supposing the existence of any other bodily

obstacle to matrimonial intercourse, but rather the reverse, as the woman K. was well-formed, and had during her married life given birth to five children, the last of which was just nine months old! The decision arrived at is self-evident.

Cases XXXIV. and XXXV.—Asserted Impotence from Malformation of the Genital Organs.

The following cases of alleged impotence of the husband as the basis of an action for divorce, were different from those just related.

XXXIV.—The victual-dealer, S., asserted, that her husband "was perfectly incapable of procreating, from malformation of his genital organs." The defendant contested both conclusions, and asserted, that especially during the last month, "he had almost nightly had carnal connection" with his wife. My examination failed to discover the slightest deviation from the normal in the genitals of this man, who was just forty-one years of age! This determination obviated of course, part of the further declaration of the complainant. The man was powerful and healthy, of a bony build, densely covered with hair upon the chest and extremities, he had all the other characteristics of manhood, and (as I must mention) "in regard to the power of erection possessed by his yard, I am the less disposed to doubt it, inasmuch as a disposition thereto was at once evinced upon touching the organ for the purpose of examining the prepuce." Consequently, there was in this case no reason for assuming an incapacity for procreation.

XXXV.—The merchant, H., was said by his wife in her action for divorce, to labour under the "incurable ailment" (Gen. Com. Law, *vide* p. 237, Vol. III.) of epileptic convulsions, and to be incapacitated for performing his matrimonial duty because of "malformation of his genitals." In respect of the epileptic attacks, of course I explained that I must suspend my decision, since these can only be determined by the observation of an attack; in regard to the asserted sexual malformation, however, I explained that the accusation of impotence against H., "because of the malformation of his genitals," was completely unfounded, since these organs do not present the slightest deviation from the normal.

Cases XXXVI. and XXXVII.—Asserted Impotence from Absence of the Testicles.

XXXVI.—In an action for divorce, the wife of a labourer, Z. asserted, that at their marriage, eight months ago, she discovered that her husband "was completely unfit for his matrimonial duties," and that he confessed to her "that he had no testicles." Her husband's incapacity was all the more unendurable to her, "that he attempted to perform coitus every night for hours together, till she was quite exhausted, and had to put an end to these attempts by keeping him off with her whole strength." What was the result of the examination? The husband was thirty-two years old, with a beard, and a manly voice, his penis was certainly unusually small, but in every other respect perfectly normal. "*Both testicles* are distinctly to be felt in the scrotum!" "Since now"—I went on to say further in my report—"a shortness of the penis is in no way prejudicial to the power of performing the acts of coition and procreation, and there are no other apparent causes of impotence present in Z., I must give it as my opinion, that there is no reason to suppose, that any inability to perform the matrimonial duty exists in Z."

XXXVII.—The case was different and rare enough in regard to the action of divorce raised by the wife of a master shoemaker, W., who also asserted, that in her husband "the testicles were absent," and that he was, therefore, not in a position to beget children, and consequently under complete and incurable impotence." The husband was powerful, healthy, forty years of age, and possessed all the characteristics of virility, with a somewhat largely developed penis, which was perfectly normal. "The scrotum, however, is only present in a rudimentary condition, and this rudimentary scrotum lies high up on the pubis and is *empty*, wherefore the plaintiff has an appearance of right when she asserts that her husband has no testicles. But, nevertheless, *they are very distinctly to be felt*, and of sufficient size, just outside the abdominal ring and close in front of it, and consequently are only not completely descended." We then went on to say, that this position of the testicles was not in the least prejudicial to the performance of the acts of coition and procreation.

Cases XXXVIII. and XXXIX.—Asserted Excessive Potentiality.

The wife of a man in the middle ranks based an action for divorce upon the accusation, "that her husband had abused her so frequently, and with so much violence, that a dangerous illness had been thereby produced." In proof of her statement, she presented a certificate from Dr. N. N., which testified, that "she laboured under a morbid excitement of the nervous irritability of the uterus, and that this complaint might readily arise from too frequent a repetition of the act of coition." The plaintiff also alleged, "that the penis of the defendant was of such exorbitant dimensions, that the object of marriage could not be attained;" further (!!), "that he had a set of false teeth, and his breath stank horribly." Being required to determine the truth of these assertions by an examination of both parties, I reported to the Court of Divorce as follows:—"1. The husband is healthy, and thirty-eight years of age. His male organ is not of exorbitant dimensions, as asserted by the plaintiff; in the relaxed condition it is only of the usual thickness, and of the length of one inch and a-half, and must therefore be regard as small, rather than too large, and its size could certainly form no obstacle to the normal performance of the act of procreation. Further, the man had indeed six artificial teeth in the upper jaw; but these are pivoted, very neatly made, and, contrary to the statement of the plaintiff, his breath gave forth no unpleasant, far less any unendurable, stench, so that in this respect no 'disgusting and incurable infirmity' (as mentioned in the Statute, *vide* p. 237, Vol. III.) could be held to exist. 2. The wife is a very young and perfectly healthy woman. By a digital examination through the vagina, and by the speculum, it was ascertained that the uterus was slightly retroflexed, and she *asserted* that the examination gave her pain. No swelling, sores, &c., that might have made this statement credible existed, and this purely subjective assertion of the plaintiff must, therefore, remain undetermined. In no case, however, can the alleged increased irritability of the uterus arise from violence inflicted during matrimonial intercourse by an exorbitantly large male organ, for the husband, as already pointed out, does not possess one of that character."

Cases XL. and XLI.—Asserted Female Sterility (Incapacity for Intercourse).

A subaltern official, whose action for divorce had been in the first instance dismissed, brought forward in the Court of Appeal, the assertion "that the genital organs of the defendant were so cartilaginous, or contracted by some other cause, that even the little finger could not be introduced, that this obstruction was incurable, and that the defendant was thereby for ever prevented from performing her matrimonial duty." It will suffice to state, shortly, that I examined the genital organs in question, and found them neither "cartilaginous" nor "contracted," but perfectly normal, and therefore in a perfectly fit condition for the performance of the matrimonial duty—and deflowered to boot!!

XLI.—The painter, E., asserted in his action for divorce, that his wife's breath stank so insufferably from her false teeth, and that her sexual organs were so malformed and cartilaginous, that it was impossible for him to have matrimonial intercourse with her. "Both of these allegations are perfectly baseless. The woman, E., has indeed, half-a-set of teeth in the upper jaw, which, however—and I may remark, that she could not be prepared for my visit—she keeps clean, and not the slightest ill smell is perceptible from her mouth. Just as little was there anything anormal found in her genital organs, though examined both digitally and ocularly. They are perfectly naturally formed, the vagina indeed somewhat tight, but only proportionately so, for E. has been only recently married, and, as is evident from the condition of her body, has never given birth to a child. Not the slightest appearance of any "cartilaginous" condition is to be found." Of course I declared, with due regard to the statutory regulations, "that E. did not labour under any ailment which was incurable, or capable of causing loathing or disgust, but that she was perfectly healthy, and fitted for the performance of the matrimonial duty."

It is evident from the selection comprised in the foregoing cases, that I have been at some trouble to extract from my collective observations a series of examples of every possible combination which may occur in this question, in order thereby to exhibit sufficient facts in proof of the doctrines laid down in the text of this chapter. For shortness'-sake, and to save space, I will only further remark, that besides the few cases already detailed, I have also met with a very

large number of other cases of alleged "incurable bodily ailments which excite loathing and disgust, or completely prevent the fulfilment of the matrimonial duty" (§ 697 of the Law of Marriage in the Gen. Com. Law, *vide* p. 237, Vol. III.). Amongst these there were just as many men as women who were complained of by their spouses, and these pretended "ailments" comprised, stinking perspiration or breath, or feet, involuntary escape of the urine, loathsome ulcers, and skin complaints, particularly varicose ulcers (which are of such common occurrence), "corrosive," or "loathsome" *fluor albus*, ringworm, and other similar diseases of the scalp; prolapsus of the vagina or uterus, and various forms of syphilis. On examining the individuals thus complained of, I have *never, even in one single instance*, found the complaint substantiated and the imputed "ailment" actually present!! Only once, in a married man, I found not exactly the "ill-smelling caries of the bone of the thigh" complained of, but a small fistulous ulcer which had existed for ten long years, but which presented no "loathsome" secretion. In *all* of these cases, therefore, such an opinion had to be given as was followed by a dismissal of the suit.

CHAPTER II.

DISPUTED LOSS OF VIRGINITY.

Statutory Regulations.

Penal Code, § 142. *With penal servitude for not more than five years shall be punished:*—1. *Guardians*—2. *Officials*—3. *Official physicians or surgeons charged with, or employed in, the care of prisons, or other public institutions for the sick, poor, or other helpless individuals, if they shall be guilty of any* unchaste conduct *with any person received into the institution.*

Ibidem, § 144. *With penal servitude for not more than twenty years shall be punished:*—1. *Whosoever shall upon a person of the opposite sex, commit with violence* any unchaste action for the purpose of gratifying sexual desire, *or whosoever shall, by threats of instant danger to life or limb, force another to submit to any such unchaste action;* 2. *Whosoever, by any such unchaste gratifying of his (or her) sexual desire, shall abuse any one when in a state of unconsciousness or inability to exercise volition;* 3. *Whosoever shall attempt any unchaste gratifying of the sexual desire with another person under fourteen years of age, or shall induce him (or her) to perform or permit any such unchaste action. If the person upon whom the crime has been committed shall die, the punishment shall then be penal servitude for life.*

Ibidem, § 145. *Whosoever shall induce any woman to permit sexual intercourse by pretending marriage, &c., shall be punished by penal servitude for not more than five years.*

Statute of 24th April, 1854, § 1. *Any woman who shall be got with child by rape;* 2, *when in an unconscious or involuntary condition* (§ 144, 1, 2, *of the Penal Code*), *or* 3. *by a pretended marriage, &c., is justified in demanding that the highest amount of damages prescribed in the* Gen. Com. Law, Part II., Tit 1., § 785, *shall be awarded to her.*

§ 10. General.

At all times and among all people, even the most civilized, female

virginity has been popularly regarded as the symbol of female modesty and morality, for it has not always been known that there are many female animals which also possess the organ which has from time immemorial been very properly regarded as the chief token of virginity, the hymen, which closes the entrance to the female vagina. The ancient Jews proudly carried about amongst the relatives the shift of the newly-married wife, with the bloody traces on it of the recent injury to the hymen, as a proof of chastity preserved till then, and even yet this custom, so prevalent in the East, is a popular custom in Naples, where the "shift of honour" (*camiscia dell'onore*) is exhibited to the friends.* The legislators have adopted this popular view, and at all times and among all peoples have threatened the severest punishments of the law against all immoral destruction of virginity. Amongst the Jews, the Athenians, the Romans, and by the old penal codes of the French and English the punishment was death, and this is even yet† the case in many of the American States. In Prussia, it appears, strictly speaking, as if, according to the present condition of the law no practical value was attached to the fact of actual defloration and its medico-legal diagnosis; since the Penal Code never mentions the words "virginity" or "defloration," and only lays down the very generally worded statutory principles just quoted. Nevertheless, I can testify that in individual cases the Judge very often propounds the question of defloration, particularly in regard to paragraphs 192 *a* and 193 of the Penal Code having reference to injuries, in order to determine besides the fact of the "unchaste action," itself the subject of accusation, also the probable results to the body and general health of the party injured. Moreover, in the General Prescribing Statute, § 12, Tit. 40, also speaks of "damages for defloration," wherefore it follows, that even in regard to civil law the diagnosis of virginity is practically important. The same is the case in all those actions for divorce (Cases XXXI. and XXXII.) in which complaint is made by the wives of impotence or refusal to perform the matrimonial duty, supported by an appeal to the continued existence of their virginity. Authors have written much about a physical and a moral virginity.‡

* Mayer, Neapel und die Neapolitaner, I. Oldenburg, 1840, s. 319. The author has long been a resident in Naples.

† At least this was the case thirty years ago. *Vide* Beck's Elements of Med. Jurisp. London, 1825, p. 65.

‡ The French, indeed, have different words for these conditions—*Pucellage* and *Virginité*.

A man must be very inexperienced in medico-legal matters to set up such a distinction as serviceable. No experienced medical jurist will in any case rely upon one sign alone, and will certainly not in this instance base his diagnosis solely upon the presence or absence of the hymen (§§ 11 and 12), which is doubtless what is intended; and, on the other hand, these authors by their own words are bound to show how a forensic physician can determine the intangible existence of a moral virginity, the estimation of which is, however, in any case more incumbent on the Judge than the physician.

§ 11. Diagnosis of Virginity.

1. Since the condition of the female *breasts* undergoes material alterations even by the frequent consummation of intercourse, and still more by pregnancy and child-bearing, so a comparison of these alterations with the original conditions of the breasts affords a means of diagnosis worthy of consideration. The breasts of a still youthful and healthy virgin are generally, in relation to the rest of the body, not too largely developed; they are firm and compact, somewhat conical, with the nipple as apex, the nipple itself but slightly developed. It is just as indecorous as it is unimportant to examine the erectility of the nipple; this ought therefore never to be done. The nipple is surrounded by a narrow areola, which even in persons with dark hair and complexion possesses no depth of colour, but is generally of a bright, rosy-red. But of itself, the condition of the breasts is of no probative value; because after the prime of youth is passed and more and more as years advance, the more the general freshness and fulness of body disappears, the more do the breasts become withered and pendulous. (A similar condition is often observed after frequent and long-continued sexual intercourse.) Further, the colour of the areola is not at all altered by defloration, but only by conception.

2. *The hymen.*—A comparison of very many virgins shows that the form of the hymen is extremely various; and this is of great practical importance, since a want of attention to these varieties, and a-holding fast to the idea of its semicircular form, has very probably been the reason why medical men have occasionally given erroneous opinions as to its existence. The hymen is just as frequently completely circular as crescentic. Moreover, its edges are sometimes quite narrow, at others a whole line in breadth; the opening may be

circular or oval. The membrane in all its forms may be loose and yielding, or tense and firm, or even fleshy, which is peculiarly likely to mislead. Other varieties described by observers of such great experience as F. B. Osiander and others, such as a ligulate hymen, or one consisting of several bands, a double hymen, &c., I myself have never seen, though the number of my observations both on living and dead bodies is extremely great. In children, provided no violence has been inflicted on the genitals, the membrane is easily discovered (§ 14); in adults individual circumstances may raise doubts. Thus in one case we had to make a very careful examination, to ascertain whether a young and powerful woman, shot by her sweetheart, was still a virgin. This she certainly was, but a small prolapse of the anterior wall of the vagina through the much-dilated opening in the circular hymen presented a very deceptive appearance. *Of itself*, moreover, the existence of the hymen does not prove virginity, since that a single or even several acts of coition does not always destroy it is very well known to thousands of married men, and is a matter of experience in those not extremely rare cases where pregnancy has been observed coexisting with a hymen (Walter, Hellmann, Osiander, Nägele, Fodéré, Krüger, Heim, Ribke, and Case XLVII.), cases which are perfectly explicable from our present knowledge of the physiology of procreation. Such a coincidence, however, can never render the diagnosis difficult, since this can be assisted, in spite of the preservation of the hymen, by making use of the signs of pregnancy. In other cases the hymen is only partially torn and not quite destroyed (§ 14). I must, however, confess that, on the other hand, the hymen is sometimes completely absent, without any precursory sexual defloration, particularly where an operation has been performed, or where excessive onanism has been practised. The oft-alleged possibility of the destruction of the hymen by riding, leaping, dancing, and the like, must be, when we consider the deep internal position of the membrane, placed alongside of the alleged venereal infection of men by strange privies, &c.; and if Fodéré and Belloc mean to assert that the hymen may be torn by the passage of clots during menstruation (!), yet we must not be thereby led astray in determining the value of this sign, which is *the most valuable of all in a diagnostic point of view*.* The *caruncuiæ*

* The experienced Devergie very correctly says (*op. cit.* p. 346), that when a hymen is not found, in nine hundred and ninety-nine cases out of a thousand defloration has actually occurred.

myrtiformes, which remain after the destruction of the hymen, occur in various forms. If they are recent, they appear as two, three, or more small excrescences, more or less reddened and irritated, on each wall of the vagina; when older they become withered and smaller, and at last can scarcely be recognized at all. It is important to pay attention to these differences, because the medical jurist may be asked not only *if* defloration has taken place, but *when* this has happened? In regard to this question Devergie and others have very properly observed, that when the defloration has happened long previously, no definite time for its occurrence can be decided on (*vide* § 14). I regard the possibility of the restoration of the hymen after its destruction as one of the many fables which have been related of it.

§ 12. Continuation.

3. In the virgin state, particularly after puberty, the *labia majora lie close to one another*, and completely cover the nymphæ and clitoris; previous to puberty the clitoris is often somewhat visible. The difference between this condition of the genitals and that which is the result of long-continued sexual intercourse, or of childbearing —the difference between the full, tolerably firm, and closely-shutting labia majora of the former state, and the gaping, withered, dirty brownish-yellow labia, between which the withered and often hypertrophied nymphæ depend, of the latter, is certainly very evident. Not so, however, the transition; the position and condition of the labia are not very visibly altered by one, or even by several cohabitations.

4. The same may be said in regard to the *tightness* of the vagina, which in first pregnancies is frequently very remarkable even in youthful marriages, and after very frequently repeated coitus. The existence of *rugæ* in the vagina can scarcely be called a diagnostic proof of virginity, since sometimes they scarcely exist at all, even though the hymen is still present, as may be ascertained by examination on the dead body, though during life this must be omitted in such cases lest we thereby deflower the woman ourselves. Besides such an examination would be perfectly superfluous, since the rugose condition of the vagina is only removed by the first birth, and not merely by sexual intercourse.

5. All these reasons are also opposed to the value of the *trans-*

verse position of the os externum uteri, which certainly continues till after the first pregnancy (I have observed it in the body of a virgin of seventy-three years of age), and it is not therefore altered merely by unfruitful intercourse, and moreover cannot be ascertained when the hymen is preserved. Not the slightest value is to be placed upon any of the other more recent or more or less ancient appearances on the female body, which are said to prove the integrity of virginity. No value can be assigned to the "fresh rosy lips, and bright beaming eyes, with a free yet modest look,"* which vary too much with the individual; and still less to the old Roman sign of matronhood—the swelling of the neck after defloration—which made it a marriage custom to measure the throat before and after the nuptials;† nor to the alleged alteration in the perspiration, or the stream of the urine, &c., symptoms in proof (!) of the value of which quotations are to be found scattered throughout the ancient *medicina forensis*, which must, however, be regarded as the ruins of a long decayed science.

The subject of disputed virginity must never be examined during menstruation, as then the ocular inspection is disturbed, and the genital organs are in an altered condition. And no medical jurist must hesitate to cause the rising of a court, by refusing on proper occasions to carry out the examination when called upon to do so during its session, as I myself have done more than once. The illustrative cases (§18) will contain a selection of cases, in which the reporting experts had (as is quite excusable in inexperienced persons) arrived at an erroneous conclusion, which had subsequently to be officially confirmed or rectified, and both conscience and a sense of the dignity of the position of a forensic physician, demand on the occurrence of such cases that we do not hesitate to do as has been recommended, but at once decline to examine at present, and move for permission to do so subsequently. For cases in which it is requisite to examine as speedily as possible (§ 13 to § 15), do not of course occur at the time of trial, for this, from the nature of the case, does not take place till long after the perpetration of the deed and the close of the preliminary investigation.

Not assenting to that unfounded scepticism which has been asserted in regard to this question, both in earlier and more recent times, I must declare, that where a forensic physician FINDS A HYMEN STILL PRESERVED, EVEN ITS EDGES NOT BEING TORN, AND ALONG

* Hohl, *op. cit.* p. 114. † *Collum circumdare filo.*—Martial.

WITH IT (in young persons) A VIRGIN CONDITION OF THE BREASTS AND EXTERNAL GENITALS, HE IS THEN JUSTIFIED IN GIVING A POSITIVE OPINION AS TO THE EXISTENCE OF VIRGINITY, AND *vice versâ*.

§ 13. RAPE.

In common language sexual intercourse with a woman against her will is termed *Rape*. For the ends of criminal law, however, it is of importance to ascertain whether this act has been merely attempted or completed, whether craft and seduction, or force have been employed, whether the woman was in such a state of mind as to be capable of giving her consent or not? &c. Thus the signification attached to the word rape has been variously interpreted by teachers and legislators in criminal law, and whoever takes an interest in this matter will find that in the penal codes of Brunswick, Hanover, Saxony, Baden, Wirtemberg, Darmstadt, Bavaria, and Oldenburg, carnality with persons in an involuntary or unconscious condition, or with idiots or insane persons, is separated from rape, and reckoned as violation, because the word rape always includes the idea of violence or threats of violence; and that all the more recent penal codes regard unnatural carnality attended with violence as analogous to rape, or as rape in the evident sense of the word, or as violation.* Discussions in regard to this purely judicial matter do not belong to forensic medicine, and the Prussian forensic physician has all the less practical interest in it that the penal code of his country never once mentions the word rape. But it speaks continually, as I have already pointed out (p .284, Vol. III.), of "sexual intercourse," in § 145, of "unchaste actions" by guardians, officials, physicians, &c. in regard to certain persons in § 142, and, finally, "unchaste actions for the purpose of satisfying the sexual desire," in § 144. As to all that is to be included in the latter very wide expression, that is, on our part to be left to the lawyers, many of whom very properly regard it as an evidence of great wisdom in the legislator that he has made his language so comprehensive. It is equally judicious that by the employment in § 144 of the words "a person of *the opposite* sex" every doubt which might arise from the words of our former penal code is removed, as to whether a rape might be committed by a female on a male, and punished accordingly? I myself had to examine a boy aged

* Häberlin. Grundsätze des Criminalrechtes III. Leipzig, 1848, s. 268. Œsterreichisches Strafgesetzbuch, § 125, 127, 128.

soiled with every possible kind of filth and colouring-matter, in which nothing distinctive can be seen, and the microscope alone can solve our doubts. By continuous observations of this character I have arrived at a most remarkable result, which does not indeed altogether invalidate my former dogma, that when no spermatozoa are to be found in the suspicious stain, the medical jurist must declare that there is no proof that the stain examined has been caused by semen,* but certainly requires it to be modified. It has, namely, struck me more and more in examining cases of alleged rape in which the examination of the female, the appearance of the linen, and finally, all the circumstances of the individual case, according to all experience, justified the assumption of an actual ejaculation of semen having occurred, that yet this suspicion was not confirmed by the results of a microscopic examination, inasmuch as, even after repeated attempts, no spermatozoa could be found in the suspicious-looking stain. The consideration now, that in many animals, particularly in birds, the seminal fluid does not always contain spermatozoa, but only at the rutting period, that these animalculæ are not developed in hybrids,† and the experience that the seminal stains in the linen in apparently similar circumstances by no means always exhibit the same colour and consistence, and have a different appearance in the case of young and healthy, than in that of old and sick men, &c. Finally, the fact that, Duplay, in his observations (p. 104), out of fifty-one old men, fourteen times found no animalculæ in the semen, occasioned me to undertake new investigations, which are not as yet very numerous, since they have only been recently commenced, but which have already afforded very remarkable results, and have proved what I suspected to be the case. I relate the following observations:—

Numerous spermatozoa were found in the following cases:—

1. and 2. Four vigorous journeymen butchers were suffocated in carbonic oxide gas. They were all between *twenty* and *twenty-five* years of age. The seminal vesicles were examined in all of them. In A. the spermatozoa were in the *usual number*, in D. they were still more plentiful. For the two others, *vide* under No. 12 and 13.

3. A trust-worthy observer, Dr. Abel, staff-surgeon at K., who

* Thanat. Theil. 2 Aufl. s. 221. It has been modified in the Third Edition, *vide* Vol. I. p. 206.

† J. Müller, Handb. d. Physiol. II. 1840, s. 637.

had previously acquired when in Berlin an interest in this subject, had the remarkable opportunity of observing *a number* of spermatozoa in an invalid, aged *ninety-six years*, who died in the Invalid Hospital at K., and this case he has kindly communicated to me.

4. The carriage-varnisher, E., who was just *sixty-five years* old, but who looked seventy from his emaciation, thin and snow-white hair, and the loss of almost all his teeth, and who had killed himself by slitting open his belly, had *numerous* zoosperms in his vesicles.

5. An invalid, aged *sixty-eight*, who died of fracture of the pelvis, five days after having been run over by a carriage, had a *large number* of zoosperms in his vesicles. His figure was powerful. Hair and beard grey. Teeth tolerably well preserved. The unusual length of the penis of this body was remarkable.

6. *Numerous*, but small zoosperms were found in a gigantic shoemaker, aged *thirty-five*, who was affected with gonorrhœa, and had hanged himself.

7. A vigorous naturalist, *sixty years of age*, a married man, and father of a large family, and accustomed to the use of the microscope, whom I had interested in this question, examined with me for a time continuously his own semen after coitus. Here we found the *greatest variations*, which were accurately noted by both of us together. After coitus on the third day, reckoning from the last performance of the act, there was a *large number* of very *small* spermatozoa; after renewed coitus on the fourth day *few* and *small;* after a pause of only two days *none;* after a pause of only one day there was only a watery *sperma*, in which *no zoosperms* were found. At another time, on the fifth day after the last coitus, the zoosperms were *very numerous:* another time, after a pause of six days, they were *few* but *large in size;* four months after the last examination, and seventy-two hours after the last act, the zoosperms were *comparatively* very small, and at another time, on the third day after the last act, they were *innumerable*. Immediately after coitus, and before emptying the bladder, the urethra was twice examined. Twenty-four hours after the last act, a drop pressed out of the urethra, exhibited *numerous small* zoosperms; at another time, after a three days' interval, there was *not a single* zoosperm.

8. In a man, *thirty-eight* years of age, of truly herculean proportions, who was hanged, we found *many* zoosperms of a *small* size in the seminal vesicles.

9. In a man, aged *thirty*, who was drowned, with a chancre on his penis, there were a *considerable number* of small zoosperms.

Only a few spermatozoa were found in the following cases:—

10. A *sixty* years' old drunkard fell down drunk upon the street and died. The lungs were strongly adherent. The left ventricle was hypertropied, its cavity was only about one-third of its usual size. There was a fibrous tumour in the spleen. The man was thus both aged and diseased. His seminal vesicles contained a dirty-greenish thick fluid (such as is often seen in dead bodies), which (with a power of two hundred and eighty diameters) exhibited spermatozoa * very distinctly, but *few* and *small*.

11. A man, aged *fifty-eight*, who had hanged himself; his hair was quite grey, but he was robust and healthy; his penis was unusually large, and as it were in a state of semi-erection. A drop of fluid like semen was pressed out of the urethra, and we found in it *one* zoosperm; in the seminal vesicles there were a *few*, but very *large* zoosperms.

12. and 13. In the other two journeymen butchers, aged from *twenty-* to *five-and-twenty years* (*vide* above 1. and 2), in B. the seminal vesicles were almost empty, and exhibited a *very few* zoosperms, and there were still *fewer* in the case of C.

14. The baker's apprentice, X., aged twenty years, who had hanged himself, exhibited a powerful development of body, a large member, hair on the pubis, but not a trace of beard. *Very few* zoosperms were found in the seminal vesicles.

15. The apprentice, K., according to his father's statement, was in his *sixteenth* year; three days previously he had died of pyæmic pneumonia after a long illness. He was five feet three inches in height, robust, the penis well developed, the pubic hair tolerably plentiful, but not a trace of beard. After repeated examination of the contents of his vesicles, only *one* large zoosperm could be found.

16. A journeyman tradesman, aged *twenty-nine* years, had drowned himself. We could not dissect the body, but in a drop of milky fluid, pressed out of the urethra, we found *two* spermatozoa.

17. A workman, aged nineteen, suddenly killed by the fall of a building, a strong powerful man, had a *very few* largely developed zoosperms in his seminal vesicles.

* The micrometric definitions, which are wanting in these cases, are of no importance in regard to what is here sought to be determined.

18. A man, who was hanged at the age of *two-and-thirty* years. In a drop of milky fluid from the urethra, there were *no* zoosperms, and only a *very few* in the one seminal vesicle examined.

19. Precisely *the same* observation was made in the case of an subaltern-official of the post-office, aged *thirty-three* years, who had hanged himself.

20. In the very strongly-built leather-dresser, A., fifty-eight years old, who had hanged himself, *one* zoosperm was found in the urethra, and *remarkably few* in the seminal vesicles.

21. A watchman, aged *thirty-eight*, who had killed himself by cutting his throat. Few and small zoosperms in the seminal vesicles.

22. *Remarkably few* zoosperms were found in a thin but healthy man, about *forty-eight* years of age, who had killed himself by a shot through the head.

Finally, no spermatozoa were found in the following cases :—

23. At the dissection of a master cabinet-maker, just *fifty-four* years of age, who had received a stab in the elbow-joint, for which resection of the olecranon had to be performed, and which had kept him six weeks in the Hospital, when he died of pyæmia, we found *no* zoosperms in the seminal vesicles. He had an unusually large developed penis.

24. A very healthy and powerful man, of *thirty-four* years of age, had been drowned three days previously. The body had only lain eighteen hours (in March) in the water, and was very fresh. The semen in the vesicles had quite the usual appearances but contained *no* zoosperms, and *none* were found in the testicles and epididymis, which were quite normal.

25. A shoemaker, who was *sixty-three* years of age, but who looked much older, with perfectly white hair, collapsed countenance, and with only two or three teeth in his mouth, had been driven over by a carriage upon the road to Charlottenburg, and killed on the spot (by rupture of the liver) four days before the medico-legal dissection. The semen in the vesicles was somewhat greenish-yellow in colour and of treacly consistence, and contained *no* zoosperms. His aged-looking wife was present at the dissection, and told me in answer to a question, that her husband had had no intercourse with her for many years.

26. A workman, aged *thirty-five*, who had hanged himself. This robustly-built man was five feet four inches in height, and very fat;

observed, and are still to be seen. Moreover, it cannot be denied that it is quite possible that R. may have been infected by merely sleeping in the same bed with E., already affected with syphilis; but in this view of the matter it is remarkable that the former should have precisely the same forms of the disease on his penis and anus as E. has. It is certainly probable that reciprocal contact of both the male organs with both posteriors has been the source of the infection, and this most easily explains the remarkable totality of the symptoms; and I do not, therefore, hesitate to answer the question put to me precisely in its own terms, that the diseased condition of the two parties accused is rather confirmatory of the suspicion that they have had unnatural connection with one another than the reverse." The accused were condemned.

Cases XCI. and XCII.—Enforced Pæderastia.

The appearances found were quite different in the two following cases, which stand alone among all the cases which I have had occasion to examine, inasmuch as they are instances of rape committed upon male subjects, and the investigation was either made at once or very soon after the commission of the deed. The first case, XCI., was that of X., a servant, aged twenty-one years, who being unable longer to endure the loving importunities and bodily injury inflicted on him by his master, one morning after the latter had dragged him to bed and violated him, as he alleged—his allegations as to the circumstances preceding the deed, and the *apparatus* employed, were confirmed on the house being searched—he ran off straight to the police, who immediately brought him to me. In this case I found a small laceration two lines deep in the sphincter ani on the left side, and the whole of the sphincter was irritated and painful to the touch. There was nothing else anormal visible on his body.—XCII. The other case was that of a boy aged sixteen, who, however, had only the corporal and bodily development of a child of twelve. He was persuaded by the house painter, X., to pass the night in bed with him, and was then violated. According to the statement of the boy, the accused "had bored his penis in behind him, so that he had become wet;" and subsequently there was both pain *in walking* and in defæcating. On the fifth day after the night alluded to, I examined the boy. There was an evident gaping of the nates, and a trumpet-like depression towards the anus; but the most important

appearance was a recent laceration two lines long, in the skin of the right side close to the anus, which was suppurating slightly. It was also somewhat remarkable to find in so young a boy two small blue, distended venous sacs in front of the anus. The sphincter was uninjured, and the anus was perfectly closed. But the examination was very painful to the boy, and his statement, that he still (after the lapse of five days) felt very great pain during defæcation, was all the more credible that on attempting, at my investigation, to press down the rectum, the pain was so great as to cause the boy to cry. Our decision was as follows:—The investigation has revealed the existence of facts which support the accusation.

Case XCIII.—Pæderastia enforced by a Boy on a Boy.—Zoosperms.—Capacity of the Boy for Procreation.

Passing over other cases, I must relate the following very instructive one, because it points out an unusual mode of obtaining medico-legal proof of the crime, and it was in so far perfectly novel. I was intrusted with the investigation by a foreign jury court. A peasant woman having observed injuries on the anus of her son, aged eight years, had accused a peasant lad, aged *fourteen years and a-half*, of having induced him to go with him into the open country by promising him a piece of bread-and-butter, of having there abused him pæderastically. The boy asserted that these injuries were caused by a ride upon a cow, which was also proved to have occurred. I found on both nates close to the anus, two perfectly similar, painful, reddish-brown, abraded patches, each the size of a walnut, and which were already dry; the anus and all the rest of the body were quite normal. In fact, it could scarcely be supposed that these excoriations could have arisen from the friction of a male organ, whilst their origin was much more easily explicable by referring it to a ride upon a cow's back (in August, with linen breeches on). The accused lad denied everything. But, I found upon the shirt of the child, which was subsequently impounded, and on the *lower* part of its *posterior portion*, what evidently appeared to be a seminal stain, and the microscopic examination (carried out sixteen days after the occurrence) revealed the existence of well-preserved zoosperms. Considering now that the child was just eight years old, and consequently could not be supposed to be already capable of forming semen, the source of this stain must therefore be certainly sought for in some

older male subject; considering further, the position in which this stain was found, I did not hesitate to assert that some pæderastic attempt must have been made upon the child. One month subsequently, I had to examine the accused in prison; I found him to be a vigorous, muscular, large-boned lad of the age already mentioned, who certainly as yet had no growth of beard, no formed male voice, and no hair upon the pubis,—all very remarkable appearances in regard to the case in hand! His male organ was of the usual dimensions of this age, but the testicles, still of small size, lay not in the scrotum, but close in front of the abdominal rings. The lad confessed to have occasionally had erections. In my opinion the gist of the case now lay in determining whether he could be supposed to possess already the power of forming semen and the desire to ejaculate it, and I answered both affirmatively, of course without any reference as to his having committed the abominable crime in question. Nevertheless, he was convicted and condemned. It is evident that the discovery of zoosperms in the posterior part of the shirt of a man already capable of forming semen can be of no probative value in disputed cases of this kind. But the occurrence of this fact in a child of the age referred to makes this case very instructive in regard to any similar cases that may occur.

Cases XCIV to XCIX.—Masturbatory Irritation in Boys and Girls.

XCIV.—The porter, F., had for long practised masturbation upon five boys in the most frightful manner several times daily, he himself remaining quite uninjured! The truly ape-like skull of the accused was most remarkable, with its forehead so low as to be quite flat, and its prominent cheek-bones and upper jaw. I was only required to give evidence before the jury in regard to the injurious consequences to the health arising from this misdeed. F. was condemned to penal servitude for many years.

XCV. to XCIX. Only two months later the teacher, F., was brought to the same bar accused of having practised the same abomination as the porter just referred to, with two boys and three girls from five to nine years of age. The questions put before me at the preliminary investigation were something quite unusual, and as follows: "Whether it can be decided from the appearance of the genitals of the children that the injury must have arisen from the manipulations of a third party,

or whether it may not have arisen from the manipulation of the children themselves? Whether the ailing condition in which some of the children have been for some time has any connection with the injury to their genitals or not? Whether there is any danger to the health or life of the children to be apprehended from the unnatural treatment to which they have been subjected by a third party?" Otto, aged five years, according to the certificate of an official medical man, had exhibited three weeks before I examined him, "inflammatory appearances on his male organ with a gonorrhœal-like discharge," which had quite disappeared after two days' use of a lead lotion. I found the boy to have phimosis, but except that, he was both locally and generally in perfect health. Francis, aged six years, according to the statement of his mother, had, six weeks before my examination, "a considerable swelling of the penis, with a discharge of thickish matter." This boy also had now only a phimosis, and was otherwise healthy. Louisa, aged nine, according to the certificate of the official medical man referred to, laboured under, eighteen days before my examination of her, an excoriation, two lines long, on the left side of the entrance to the vagina, with painful swelling and redness of the parts adjacent. The girl was now locally and generally in perfect health, and not deflowered. Louisa M., aged seven years, was, at the same time referred to, certified to have a red and raw patch the size of a sixpence at the entrance to the vagina. I found that this redness had not quite disappeared, but the child was otherwise healthy, and not deflowered. Finally, the girl Mary, aged six years, was at the time already alluded to, declared to have had on the right side of the entrance to the vagina a "considerable redness and raw patches." At the time of my examination this redness was no longer visible; the child was healthy, and not deflowered. My examination, therefore, I declared in my report, had proved nothing in regard to the children Mary and Louisa, which could justify the assumption of there having been any previous irritation of their genitals. In regard to the trifling redness of the genitals of Louisa M., this *might* possibly have arisen from repeated manipulation with the finger, and this could scarcely be supposed to have been done by the child's own hand, as she was just seven years of age: but this trifling redness might also have arisen from internal causes, as is frequently observed in little girls. The phimosis (which may be readily removed by a simple operation) observed in the two boys is also frequently found where there has been no previous sexual irrita-

tion, and is not infrequently congenital. It may also be caused by an inflammation of the genital organs, the urethra, or the prepuce. The remarkable circumstance that we had here two boys in the same house both labouring under phimosis arising from the same alleged cause of inflammation, certainly permitted the conclusion to be drawn that it had not, as was unknown to the parents, previously existed, but had been produced by repeated irritation of the sexual organs, while, of course, the tender age of the children made it very improbable that such irritation had been voluntarily brought about by themselves. Accordingly I answered the judicial question as follows: that the conditions of the genitals of the boys, Otto and Francis, makes it *probable* that they have been manipulated by a third party; also that the morbid condition of the genitals of Louisa M. may *possibly* have been produced by similar manipulations. I did not assume that the children had been thrown out of health, or that there was any anxiety as to their life or future health. The accused denied everything, "By God and his blessedness." (!!) He was, however, convicted. This man had also a most remarkable and unusually formed skull, which was large posteriorly, with prominent cheek-bones and upper jaw. This formation was so remarkable that it gave occasion to a question which was put to me as to whether any conclusion as to his guilt could be drawn from it? I referred to the peculiarly formed skull of F. (the case previously related), who had been condemned shortly before, which this man's skull in many points resembled; but, of course, I denied that any conclusion could necessarily be drawn from this. The culprit was condemned to penal servitude for many years.

Case C.—Discovery of Pæderastia on a Corpse.

This case is also quite unique. A merchant's clerk had poisoned himself with sulphuric acid, and there were suspicions of his having practised pæderastia. The foreign jury court already referred to required me to examine this body for traces of this crime. The anus was open, and fæces had escaped, but not the slightest value was to be placed upon this, which is a daily occurrence in dead bodies. It was more remarkable to find two slightly depressed, circular, sharp-edged cicatrices, each the size of a pea, situated close together upon the *mucous membrane of the rectum* at the left side, and just within the anus. These cicatrices, which had all the characteristics of the scars

of chancres, were all the more remarkable that neither ulcerations nor cicatrices, nor anything else anormal, was to be seen upon the penis or any other part of the genital organs, and primary chancre received by infection in the ordinary way does not usually occur in the rectum. Moreover, in this youthful subject (about twenty years old) the skin in the neighbourhood of the anus was distinctly smooth, and the rugæ absent. Accordingly, I gave it as my opinion that the appearances on the body made it very probable that F. had been pæderastically abused.

PART SECOND.

DISPUTED PREGNANCY.

Statutory Regulations.

General Common Law, Part II., Tit. 2, § 2. *The husband shall only be heard in opposition to the statutory supposition* (the legitimacy of all children born during the subsistence of the marriage), *when he can convincingly prove that he has not had matrimonial connection with his wife in the period between the* three hundred and second *and the* two hundred and tenth *days previous to the birth of the child.*

§ 3. *If in such a case he pleads impotence, then he must prove that this has been complete during the whole of the period referred to.* (§ 4. *respects the absence of the husband.*)

Civil Code, Article 312. *Any child conceived during the subsistence of a marriage has the husband for its father. He may, however, deny the paternity of the child when he can prove that from the* three hundredth *to the* hundred and eightieth *day before the birth of the child he has been, from absence or any other cause, physically unable to have matrimonial intercourse with his wife.*

General Common Law, Part II., Tit. 2, § 19. *Any child born within* three hundred and two *days after the death of the husband must be regarded as his legitimate child.*

Civil Code, Article 315. *The legitimacy of a child born* three hundred *days after the dissolution of the marriage may be disputed.*

General Common Law, Part II., Tit. 2, § 20. *The heirs of the husband may dispute the legitimacy of such a child only within the period and for the same reasons which the deceased husband himself would have been justified in employing* (*Vide* §§ 2, 3, 4 above).

§ 21. *Should, however, the appearances of immaturity in the child show that it must in the ordinary course of nature have been begotten after the decease of the husband, and should the widow also be con-*

victed of suspicious intercourse with other men after her husband's death, then the child is to be declared illegitimate.

IBIDEM, PART I., TIT. 1, § 20. *Widows and divorced wives are not permitted to marry again till* nine months *after the dissolution of the former marriage.*

§ 22. *The ordinary Judge may permit a widow or divorced wife to marry again before the lapse of nine months, when it appears from circumstances and the opinion of the expert that it is not probable that she is pregnant.*

§ 23. *Any such dispensation shall not, however, be granted previous to the lapse of* three months *after the dissolution of the former marriage.*

CIVIL CODE, ARTICLE 228. *No wife can marry again till after the lapse of* ten months *after the dissolution of the former marriage.*

GENERAL COMMON LAW, PART II., TIT. 2, § 22. *Should a widow have married again too soon, contrary to statute, so that it may be doubtful whether the child born during the subsistence of this other marriage have been begotten during it or during the former one, due attention must be paid to the usual epoch, namely, the* two hundred and seventieth *day before the birth.*

§ 23. *Should this day fall within the lifetime of the former husband, the infant is to be regarded as his legitimate child. (&c.)*

IBIDEM, PART II., TIT. 1, § 1077. *The party deflowered can only sue for the statutory indemnification, when the confinement occurs between the* two hundred and tenth *and the* two hundred and eighty-fifth *day after coition.*

STATUTE OF 24TH APRIL, 1854, § 1. *A woman who has been impregnated,* 1. *by rape,* 2. *while in a senseless or involuntary condition, or,* 3. *by seduction, &c., is justified in demanding that the highest amount of damages prescribed in the* Gen. Com. Law, Part II., Tit. 1, § 785, *be assigned to her.*

§ 6. *The Regulation of* § 2. *is also applicable when an innocent girl of from fourteen to sixteen years of age has been seduced and impregnated.*

§ 15. *He is to be regarded as the father of an illegitimate child, who has had perfect connection with the mother in the period between the* two hundred and eighty-fifth *and the* two hundred and tenth days *previous to the birth. Even when the intervening period has been shorter, this supposition is well-founded when the appearance of the*

fœtus is, in the opinion of the expert, in unison with the time of the coitus.

§ 25. General.

The purely obstetrical subject of pregnancy has several very important judicial relations, and therefore comes also under the cognizance of forensic medicine. For example, pregnancy itself may be disputed, and may therefore require to be determined by the forensic physician, in which case there may be one of two alternatives, either pregnancy is actually present, but denied (concealed or dissembled pregnancy), or *vice versâ*, a pregnancy which has no reality is pretended, or alleged to exist, either by the persons themselves or a third party (simulated or imputed pregnancy). On the whole, disputed pregnancies are not of frequent occurrence, and are of far more rare occurrence in forensic practice than is generally believed, as I can testify that of many hundred examinations of the living subject which I have to perform annually, but very few are in relation to questions of disputed pregnancy. Investigations in regard to doubtful births are of far more frequent occurrence. And this is easily explicable, because pregnancy is a transitory condition of relatively short duration, and deceits, false accusations from sordid motives, &c., which have reference to it, very soon become untenable and come to an end, whilst a confinement is and remains an indelible fact. For this reason also pregnancy is much more often disputed *in foro*, in criminal than in civil cases. In the latter, for instance, when a woman, after the dissolution of one marriage, wishes to enter upon another, and there exists a suspicion of pregnancy, which, however, the statutes (*vide* above) require to be positively determined; or when a party seeks to force a marriage on account of an alleged pregnancy, the most short-sighted man will know how to spin out the complaint over the few months requisite to decide the truth of the allegation, and the case is thus once more removed from the cognition of the medical jurist; or if an heritage be claimed for an unborn heir, whose existence is alleged, the same remedy is applicable, as is also the case where an adulterous impregnation is asserted by the one party and disputed by the other in an action for divorce, &c. Actual pregnancies are, as is well known, continually concealed when they are illegitimate. But this concealment can in general only happen now from modesty, is no longer of any criminal significance, and gives no occasion for any judicial or medical interference now that

in the Prussian, as well as in all our recent statute-books,* the mere concealment of pregnancy is no longer threatened with punishment. On the other hand, in criminal law, questions in regard to disputed pregnancy arise in cases of alleged rape followed by impregnation; or in cases where procreation is alleged to have taken place within the forbidden degrees (Incest, Case XXVI.), or when pregnancy has resulted from any other illegal and punishable form of intercourse, as, for instance, in a case in which one of our jailors had impregnated a female prisoner; or in those cases in which an unconquerable longing, the result of an alleged pregnancy, is pleaded as an excuse for some offence or crime which has been committed; or when pregnancy is pleaded in bar of some severe punishment, &c. Other questions are also frequently combined with that of pregnancy in a medico-legal aspect, as I have already pointed out in the previous chapter, such as, At how early and how late a period of female life is pregnancy possible? (§ 8); Whether pregnancy can be the result of coitus in an unconscious condition? (§ 17, *sub* 3); Whether pregnancy may occur previous to menstruation? (§ 8), &c. And even these examples do not exhaust all the combinations which occur in actual forensic life, as is evinced by a remarkable case which engaged my attention at a judicial trial sixteen years ago, and which assuredly evolved an unexpected question. A physician had abused a woman who had been confined just eight weeks previously, and she had denounced him with the assertion that the result of this abuse had been an abortion. At the trial I was asked, Whether a woman *could become pregnant eight weeks* after her confinement? Whether she could be aware of her pregnant condition? and whether she could abort eight weeks after her confinement? The accused physician had (of course!) negatived all these three questions. I answered the first affirmatively, with the remark that a conception so soon after a confinement was of rare occurrence; in regard to the second question, I declared that the recognition of pregnancy at its very earliest period was very difficult and deceptive, and of course I gave an unconditional affirmative to the third question.

§ 26. Diagnosis of Pregnancy.

If the ordinary medical diagnosis of pregnancy is often a difficult task, there are still other difficulties in the way of the medical jurist

* Häberlin, Grundsätze des crim-Rechts, iii. Leipzig, 1845, s. 66.

in relation to this, which do not exist for the ordinary medical (obstetrical) practitioner. For to him the party to be examined comes with all openness and truth, it is not her interest to conceal what she knows or feels, or to add or subtract anything. But the party to be examined occupies a different position in relation to the medical jurist. Since, as the question of her disputed and still doubtful pregnancy has already become a judicial one, that of itself sufficiently expresses the fact that either the party herself alleged to be pregnant, or some third party has an interest in having it declared that the opposite of what really exists be assumed as truth, and be taken as the basis for the verdict to be delivered; that therefore an actual pregnancy is alleged by one party or the other not to exist, or *vice versâ* a non-existent pregnancy is alleged to be real. The medical jurist must at least in every case presuppose the existence of such an alternative, since only cases of disputed pregnancy are brought to him for examination. For this reason he must estimate the various signs of pregnancy with far more caution than an ordinary medical practitioner. For medico-legal objects these signs may be best divided into the following categories—*a. Subjective* signs, that is, such alterations upon and within the female body which can only be observed by the party reputed pregnant, and *objective signs*, or those which may also be observed by the forensic physician; *b.* such alterations as *disappear* on the cessation of pregnancy, and such as, when once produced by a first pregnancy, remain after its cessation, and *continue*, through all the rest of life; *c.* such as are relative or *individual*, that is, are peculiar to this or that woman; and such as are *absolute*, wholly independent of individual peculiarities of constitution, and are consequently common to every pregnant woman. In regard to the medico-legal value of these signs, those that are subjective and those that may remain from a previous pregnancy are of no diagnostic value forensically; the former, of course not, because alleged sensations and perceptions, which are only subjective, can neither be proved nor disputed by the medical jurist, who, as I have already said, must be continually prepared for lies and deception in these matters; and the latter, those alterations which do not disappear, because in each individual case the thing to be determined is the existence or non-existence of a pregnancy *now*, whilst the existence of a former pregnancy is generally not denied, and therefore has not to be determined, though signs of this class when present are not always to be placed to the account of a former

pregnancy. Further, all individual diagnostic signs are of but very little value, since the medical jurist, from the nature of the matter, has always to do with subjects whose peculiarities, bodily constitution, morbid predispositions, and previous illnesses, &c., are wholly unknown to him, and the examination cannot supply him with any certain data in regard to them. I shall now proceed to consider the various signs in detail.

§ 27. Continuation.

Ad a.—Among the purely subjective signs may be reckoned, 1. *Neuralgiæ,* and functional disturbances of the nervous system generally, toothache, giddiness, a beating pain in the back of the head, which Beccaria* does not hesitate to call a rational symptom of pregnancy before the fourth month (!), further, to this head belong the manifold mental peculiarities, and finally (nervous) vomiting. Besides that in thousands of pregnant women these anomalies are entirely absent; it is also evident that an assent to any of them on the part of the person examined opens up to her the freest field for the utterance of all manner of untruths. 2. *Quickening,* so long as the movements of the child are purely subjective phenomena, and are not yet to be objectively appreciated (*vide* p. 357, further on). Every experienced physician knows very well how often women are deceived in this respect, and consider and declare *bonâ fide* the most various proceedings in their interior, even the circulation of wind in their bowels, to be fœtal movements. Moreover, where pregnancy actually exists, all subjective sensations that may possibly be present are carefully concealed by the pregnant woman when it is her interest to deny her condition.—*Ad b.* Amongst those persistent signs which may be the result of a previous pregnancy we may reckon, 3. *A circular condition of the external uterine aperture,* which after the first confinement never regains the transverse character it had in its unimpregnated condition, and which cannot, therefore, prove the disputed existence of pregnancy in a *multipara.* In the course of the very numerous examinations of maidens and wives which I have undertaken for various purposes, I have constantly observed this difference between the os uteri in those who have never been impregnated and those who have been so, or who may have been so at the time. But even *hydrometra,* uterine hydatids, and other similar

* Archives gén. de Médic. Tom. 21, p. 443.

diseases occasion a dilatation of the vaginal portion of the uterus and a circular condition of its os, and this is another reason for depreciating the probative value of this sign. In regard to this, an obstetrician of so much experience as Hohl, remarks,* "by the increase of size of the vaginal portion (of the uterus during pregnancy) the two angles of the os uteri are obliterated; its lips form a ring no longer interrupted by these angles, and the external opening of the cervical canal appears round because the canal itself is so. Upon this circular form of the os uteri, which is never perfect in women who have already produced, no value is to be placed as a diagnostic sign of pregnancy, since it does not always occur even in a first pregnancy, and the os uteri often assumes a circular form from natural or morbid menstruation, particularly if attended with hyperæmia, or morbid alterations of the uterus." 4. *A dark coloration of the areola round the nipples,* which becomes of a dirty brownish-red instead of the clear pinky-red of the unimpregnated condition. The increased deposit of pigment in the areola which commences in the first few weeks of a first pregnancy, I hold to be a good sign, but since the coloration persists after the cessation of the pregnancy, this appearance cannot be regarded as of any probative value in regard to the existence or non-existence of pregnancy at the time of the examination. Other pigmentary deposits which are certainly frequently observed in pregnant women are of much less or no diagnostic value at all. Amongst these we may reckon the so-called liver-spots (ephelis) upon the forehead, face, neck, belly, &c., and a dark-coloured line in the middle of the abdominal parietes. The former occur even where there is no pregnancy—in which they are very often absent—when there is any abdominal disease, and just as frequently in males as in females; the latter is also observed in abdominal dropsies, &c., and the fallacy of this sign, which was formerly reckoned valuable, is now acknowledged by all recent writers on obstetrics.† The observations which Elsässer has made upon no fewer than four hundred pregnant women are particularly decisive;‡ from these he obtained the following results: "the brownish-yellow line in the middle of the abdomen and around the umbilicus in pregnant women has, in regard to its origin, no causal connection with the pregnancy, in

* Lehrb. der Geburtsh. Leipzig, 1855, s. 195.

† *Vide* Hohl, *op. cit.* s. 187. Scanzoni, Lehrb. d. Geb. III. 3 Aufl. Wien, 1851, s. 115. Credé, klin. Vortr. über Geburtshülfe. Berlin, 1854, s. 375.

‡ Henke's Zeitschrft. f. d. St.-A. 1852, s. 237, &c.

so far as that, in the course of my very numerous observations, it was found to be entirely absent in many pregnant women, while on the other hand it was distinctly observed in many youthful and unimpregnated females. The cuticular colorations in question, therefore, of themselves possess a very limited diagnostic value, and *none at all in a forensic point of view.*" 5. The shining, or often more or less freckle-like coloured, *cicatrix-like lines on the abdominal parietes,* caused by laceration of the rete Malpighii, are seldom absent in the larger proportion of cases of *advanced* pregnancy, because of the considerable distention which then exists, but for that very reason they are of no use as diagnostic signs of pregnancy in the early months, because they are then still absent. The objection which has been urged from the fact that such cicatrices also occur when the distention of the abdominal parietes has proceeded from another cause, such as abdominal (ovarian) dropsy, &c., is in itself quite correct, but loses much of its exactness when employed in regard to the determination of judicial cases of pregnancy, and particularly of childbirth, as I shall presently point out (*vide* § 37). But these albugineous lines also never disappear after a first pregnancy, and consequently their discovery in a *multipara* cannot prove that pregnancy exists at that time.—*Ad c.* Among the more individual signs of pregnancy must be reckoned, 6. *The coloration of the vaginal mucous membrane like wine lees,* which is distinctly observed at the entrance of the vagina when it is present, and does not require the use of the speculum to get at the deeper-lying portion of its walls. This dirty purplish-red colour is certainly very often observed in those who are actually pregnant, but it is just as often absent, and where it does exist it evidently depends, like 7. the *varices* on the external genitals, on the lower extremities, &c., and also, 8. *Hæmorrhoidal tumours,* upon individual predisposition, fulness of blood, abdominal plethora. The absence of these signs, therefore, can prove nothing, particularly the perfectly worthless varices and hæmorrhoids which, as is well known, are of daily occurrence under the most various circumstances, and are just as often seen in men as in women. I shall leave it undecided whether, 9. *the turgescence of the labia majora and the perineum,* "the soft swollen condition of all those parts which lie between the anterior wall of the vagina and the pelvis, the vaginal vault, the cervix uteri, and even the uterus itself," upon which Hohl (*op. cit.* p. 222) puts a special value, is of any worth, particularly when we have to determine the existence of

a pregnancy during the first three months,—I shall leave it undecided whether these phenomena do not also belong to the category of purely individual signs, and are not to be referred to the same causes as those already mentioned; at any rate I cannot estimate their value as very high for the purposes of forensic diagnosis, because in their estimation too great room is given to the individual opinion of the explorator, who, as I have already observed, has never before seen or examined the party to be investigated, and occasions for self-deception will be all the more ready to occur if the party examined be a *multipara*.

Far more valuable in a diagnostic point of view than those already enumerated, are the absolute signs of pregnancy, that is, those which have an actual causal connection with this condition, and which consequently can never be entirely absent in any case of real pregnancy, when taken in its totality and normal duration, though a few of these bodily alterations do also occur as the result of other causes. Amongst them may be reckoned, 10. *The cessation of the menses* on the occurrence of impregnation. In the first place; the forensic practitioner regards this sign, which possesses a greater popular reputation than any other, as an early proof of pregnancy, from quite a different point of view from the ordinary practitioner. From the very nature of the matter it is scarcely possible, except in the case of female prisoners, for the medical jurist to assure himself of the actual cessation of menstruation. Nothing is easier than for a person pretending to be pregnant, to declare that she has ceased to menstruate for so long, and it is only by a lucky chance that the medical jurist is able to take her by surprise with her menses flowing, and thus to prove her lying. In general he has no means of ascertaining the truth of this statement. And contrariwise, the medical jurist is often attempted to be deceived by those who wish to conceal their pregnancy by means of an *artificial menstruation*, that is, by periodically staining the linen with blood, and of this I have seen several examples. Now, as there is no difference between menstrual and other human blood (§ 14, p. 287, Vol. III.), any deception of this kind can only be detected with certainty where bird's blood has been employed—as I once had occasion to observe in a young girl, who was in the habit of killing pigeons for this purpose—whose blood corpuscles are readily recognised by their oval form. The diagnosis is rendered much more difficult when mammalian blood has been employed; but of this I have already spoken (General Division, Part

III., Chapter II., § 39, Vol. I.). As I have already said, it is only by chance that the medical jurist has presented to him for examination, not the linen merely, but the woman herself, who is alleged to be menstruating. In this case, Hohl's proposal * to wash out the vagina with warm water, and then to ascertain by digital examination, whether any blood is still flowing, is both easy of execution and certainly judicious, whilst other methods of diagnosing a deception—the estimation of the peculiar turgescent condition of the uterus, particularly the softening and intumescence of the cervix, and the approximation of the os to the annular aperture, &c.—may give rise to mistakes, especially in the case of *multiparæ*. The most important matter is the untrustworthiness of the symptom in itself. Every tyro knows how often from various causes, throughout the whole period of the age of fertility, the menses cease without there being any pregnancy in the case. And, besides the occurrence of cases of pregnancy without there having been any previous menstruation, which are always very rare, it is also very well known that the continued persistence of the menses does not exclude the existence of pregnancy, especially not in the first few months, which are precisely the most difficult of diagnosis. That this is actually much more frequently the case than is generally believed, is proved by the investigations of Elsässer on fifty pregnant women,† in whom menstruation persisted after impregnation, in eight cases for once, in ten for twice, in one for two or three times, in eleven for three times, in one for three or four times, in four for four times, in six for five times, in five for eight times, and in two for nine times. For all these reasons, therefore, the cessation of menstruation is but of very subordinate value forensically as a sign of pregnancy.—11. *The development of the nipples and their areolæ* (irrespective of the coloration already referred to at p. 353, Vol. III.), that is, the turgescent condition of the former, and the prominence of the glandular follicles in the latter, does not possess the value assigned to it by so many, but is in truth almost useless for our purposes. For it is not a constant occurrence, particularly in the early months; it also occurs in those who have been distinctly never impregnated, and when once produced by a first pregnancy it never disappears, so that this sign is one of those persisting signs, whose value has already been estimated (p. 352, Vol. III.). 12. *The alterations* in the situation, position, and organisation of the *uterus*, and *particularly of its vaginal portion*.

* *Op. cit.* p. 118. † Henke, Zeitschr. Bd. 73, s. 402.

These changes on the whole do indubitably exist, and in accordance with the natural process of development they constantly and gradually advance, so that it is possible, with sufficient certainty for medical practice, to diagnose from them the period of pregnancy according to its months, an amount of knowledge absolutely necessary for forensic medicine. Amongst these alterations Scanzoni * particularly mentions "the progressive and gradually ascending softening of the vaginal portion of the uterus, as one of the most certain signs of pregnancy, since no pathological condition produces so constant a change in this vaginal portion." Of course in any matter of this kind, it is but right that I should subordinate my own opinion to that of so esteemed and experienced an obstetrical teacher; but I may inquire how it came to pass, if the signs belonging to this category are so certain, that even the most renowned obstetricians were so often wrong (previous to the discovery of auscultation) in regard to cases of doubtful pregnancy? Whoever has often examined for himself will agree with Hohl, who, after pointing out the great differences which exist in regard to this uterine sign in each individual case, adds, "whoever seeks to establish a rule for such cases, affords a fresh example of Diogenes and his lantern," † indeed, he does not hesitate to say, *op. cit.* p. 245, "forensic physicians in general place too much value upon the condition of the os uteri and its vaginal portion, two most untrustworthy parts, and especially so as to the diagnosis of pregnancy." I may also add, particularly untrustworthy in *multiparæ*—13. The *alterations in the umbilicus* are still more untrustworthy, from its primary elevation in the middle of pregnancy to its subsequent depression, which are solely caused by the considerable distention of the abdominal parietes, and which are often enough observed even in men, under similar conditions arising from very different causes. 14. The *palpable signs*, which, in contradistinction to the auscultatory, we must call those that are observed by feeling the abdomen, or by internal digital exploration, that is to say, the *feeling of various parts of the fœtus through the abdominal walls*, and those *movements of the fœtus which are* objectively perceptible (*vide* p. 352, Vol. III.) as well the *ballottement of the fœtal head per vaginam*. These signs are, indeed, only to be observed in the second half of pregnancy, and are not consequently available as proofs during the earlier periods. Further, the absence of both of the former signs does not prove the non-existence of pregnancy, since

* *Op. cit.* p. 125. † *Op. cit.*, p. 194.

a great amount of abdominal fat, or a large collection of liquor amnii, may prevent the perception of both phenomena. Finally, mistakes may occur in regard to both of these signs when circumscribed, hard, morbid tumours are supposed to be parts of a fœtus, or when the arterial pulse of the woman, slight convulsive movements of the abdominal muscles, or movements in the bowels, &c., are taken for fœtal movements. However, a careful and repeated examination in different positions of the woman supposed to be pregnant will prevent all these mistakes. And whoever has frequently had occasion to feel the fœtal movements, or the *ballottement* of the child's head, will not readily mistake them when they are actually present, wherefore, these phenomena observed by the sense of touch are, in their truly peculiar form and way, a most excellent proof of pregnancy.*—15. The *auscultatory signs*, the placental bruit, and the fœtal pulse. I do not require to estimate the various anatomico-physiological explanations of the *placental bruit*, the most tenable of which seems to be that which places its origin in the uterine vessels. Independent of the mistakes which may possibly arise from the existence of any other tumour of the uterus or ovaries, &c., and which may be avoided by repeated explorations in different positions, the placental bruit, or bellows-sound isochronous with the arterial pulse of the pregnant woman, is a most valuable sign. But the *pulsation of the fœtal heart* ascertained by auscultation is well known to be the most certain sign of all, in itself alone constituting a most positive indubitable proof of the existence of pregnancy. Credé has very correctly likened this sound to the tic-tac of a watch heard through several folds of cloth. Every one, however, has experienced for himself that, in regard to this as well as every other auscultatory phenomenon, the ear must first be taught before it can hear, and an inexperienced or unskilful auscultator will, in many cases, only express his own want of skill, and not any other fact, when he asserts that "the sounds of the fœtal heart are not to be heard in this case." However, these sounds are generally to be first heard only about the end of the sixth month, the earlier stages of pregnancy cannot, therefore, be diagnosed by means of them; † further, of course, they are no longer perceptible

* Scanzoni, *op. cit.* p. 113. Credé, *op. cit.* p. 390.

† This statement is based upon my own observations, which agree in this with those of the experienced Scanzoni, who (*op. cit.* p. 117) says, that he "has never been able distinctly to hear the sounds of the fœtal heart before

after the death of the fœtus, and in the case of small and feeble children, transverse position of the fœtus, or excessive accumulation of liquor amnii, mistakes may readily occur.

§ 28. Continuation.

A desire to render the diagnosis of pregnancy as certain as possible, both before and also since the discovery of auscultation, has been the means of introducing into science a number of other signs, which must all be regarded as *deceptive*. Nauche's supposed discovery of Kiestein, an alleged peculiar protein combination in the urine of pregnant women, has been proved by the investigations of Lehmann not to be this, but to be merely a collection of crystals of the triple phosphate, vibriones, and fungi; the glistening fatty pellicle on the surface of the urine when cooled, does not, occur in every pregnant woman, and, contrariwise, it is frequently found in a great variety of other circumstances, as no one any longer doubts. A microscopist, so experienced as Donné, denies that there is any microscopic alteration in the urine of pregnancy. Accordingly every symptom based upon supposed alterations in the urine, must be struck out. The *increased temperature of the vagina*, upon which Stein, junr., places confidence, occurs for explicable reasons in many pregnant women, but is far too individual a symptom to possess any diagnostic value. In an increased degree this is also true of the faint, spermatic *odour of the vaginal mucus* (Pallender), a symptom which entirely depends upon the cleanliness of the pregnant woman, and is besides purely subjectively dependant upon the organ of smell in the explorator, and is therefore perfectly untrustworthy and devoid of probative value. The strong *vaginal pulse* brought forward originally by Osiander, and long since given up by all as a sign of pregnancy, has been again taken up by one of the most recent authors, Credé,* who says he has found that "the arterial pulse in the arteries of the anterior wall of the vagina and in the lips of the os uteri was quite remarkably perceptible." I shall not dispute this; but I do not require to point out how readily a man might deceive himself in this matter. A diagnosis of pregnancy *after death* has been spoken of, and confidence in this

the end of the twenty-fourth week." Others say they have heard them even in the fifth month.

* *Op. cit.* p. 373.

respect has been placed upon the presence of a corpus luteum in the ovary. Although it is difficult to imagine that this question could ever be of any practical forensic importance, yet I may mention that my observations made in the course of my examinations of dead bodies completely confirm those of Bischoff, Hohl, and other earlier observers (Everard Home, &c.), that the corpora lutea found after pregnancy are not to be distinguished with any certainty from the corpora lutea, the result of the detachment of unfecundated ovula. Moreover, were such a question to be put to a medical jurist as, Has this deceased person ever been pregnant? he would find it much easier to answer it from the signs of *childbirth* (*Vide* §§ 35—37) to be found on the body, than from any proof to be derived from a corpus luteum. If we ask now, after all that has been said, how the forensic physician must conduct himself in relation to the numerous doubts which have been cast upon so many of the signs of pregnancy? the answer is easy. For, on the one hand, in this respect forensic medicine is in a better position than the practical portion of our science. The latter may have to act rashly and energetically even in doubtful cases, the former—can wait. In civil as well as in criminal cases, there can be no danger from delay, and four or six weeks—till after which the physician may postpone giving his decision, explaining to the Judge his reasons for this—are of just as little consequence in any disputed judicial case, as they may be important and frequently decisive in regard to the opinion of the physician. On the other hand, the construction of the (Prussian) statutes, at least in a large class of those civil cases which come under this head, those relating to re-marriage of widows or divorced women, greatly facilitates the procedure of the (Prussian) medical jurist (and similar regulations are to be found in every country). Because, if the case happens in the old provinces of the monarchy, he has only to declare, at any period during the whole course of nine months, that pregnancy *probably does not exist* (§ 22, Tit. 1, Part I., Gen. Com. Law, *vide* p. 348, Vol. III.), and there cannot therefore be any difficulty in coming to a decision in any case. And in regard to the difficult period of the first three months, his services will not (in the cases referred to) even be put in requisition, in the Rhine provinces under the sway of the "Civil Code," till after the lapse of ten complete months! Nevertheless, there are other cases of a civil nature to which we have already alluded, besides all the criminal cases of disputed pregnancy, in which the opinion of the

forensic physician may be required. And it is equally true of the medico-legal as of the ordinary medical diagnosis, that it must not be based upon one or upon a few signs, but upon the scientific observation of all the signs taken collectively. By a proper estimation of these, this question presents now, particularly since the discovery of auscultation, no difficulty in its solution.

§ 29. Duration of Pregnancy.

Pregnancy commences the moment the mature and separated ovulum has been impregnated, and ends the instant the fœtus has been born. There cannot be any doubt as to this being the absolute duration of pregnancy, but doubts instantly arise when we endeavour to define the duration of this period with arithmetical exactness, and very naturally, for even in those cases which do not come under the cognition of the Judge or the medical jurist, the actual *terminus à quo*, the period of conception, is only accurately known to the physician or obstetrician in exceptional cases, and moreover, in judicial cases, the mere statement of this period must at once excite doubts as to its correctness, just *because* the case is a judicial one. The much-disputed question, however, of the duration of pregnancy, would seem to be of no importance for medico-legal practice, since all the statute-books contain perfectly positive regulations on this point; for instance the Prussian Common Law recognises no pregnancy as of longer duration than three hundred and two days, while the Rhenish "Civil Code" restricts its duration to three hundred days, &c. But science itself cannot be thus fettered, and it would be her duty to cause the statute-books to be amended, if she could, by means of trustworthy observations show that these regulations were actually erroneous. In regard to this, however, we must ever remember that the legislator has other objects to consider besides purely physiological ones in a question such as this possessing so many important relations, and would only make use of the explanations of science in so far as they would answer his general ends. I cannot give a more striking example of this, than that, for example, the Prussian Common Law, in the passages already quoted, reckons the duration of pregnancy in one place at two hundred and seventy, in another at two hundred and eighty-five, and in a third, at three hundred and two days; that it assigns a longer duration to legitimate than to illegitimate pregnancy, in regard to which the legislator re-

quires no correction from forensic medicine, for he very well knows why he has done so. That twenty-eight days is the normal period for the recurrence of menstruation, and that the birth takes place at the end of nine months (two hundred and seventy-five to two hundred and eighty days), has been assumed since the days of Hippocrates, and has been a popular observation in all countries for thousands of years. Such a popular observation, however, in a matter of this kind is certainly, on the whole, not to be estimated lightly. Nevertheless, every medical and many non-medical men know full well how often errors of reckoning occur among pregnant women themselves. And very naturally, since the women themselves very frequently do not know the period of conception, because they are not usually in the habit of keeping count of their menstrual periods, which is in itself a matter of but little interest, because they do not know whether to reckon from the commencement or the cessation of their menses, because these had ceased previous to impregnation, or had recurred once or twice in spite of it, because mistakes readily occur in reckoning from the first sensation of the fœtal movements, &c. In a scientific point of view also, mistakes are possible, independent of other causes, because the separated ovulum retains its capacity for fecundation for from eight to fourteen days, which, reckoning from the menstrual period, gives a considerable difference in the number of days during which the pregnancy has subsisted.* Nevertheless, the general rule assumed by obstetrical teachers of from two hundred and seventy-five to two hundred and eighty days must continue to be regarded as the average mean duration of pregnancy. But it is undeniable that there are not a few exceptions to this rule, and that cases of protracted pregnancy do occur. Besides those observations made upon animals,† the like has also

* Bischoff, Beweis der von der Begattung unabhängigen periodischen Reifung, &c. Giessen, 1844, s. 44. The history of the Jewish females is remarkably confirmatory of this. In regard to this, Valentin, *op. cit.* p. 819, says—"The Jewish laws forbad the occurrence of matrimonial intercourse previous to the twelfth day after the commencement of the menses, and yet the Jewish females produced more than the average number of children.

† While omitting all mention of more ancient observations of this character, I may yet refer to those of Krahmer, made upon one hundred and seventy-seven ewes, and eleven hundred and five cows (*vide* Henke's Zeitschr. f. d. St.-Ar.-K. Bd. 57, s. 98). But the value of these observations, in relation to their application to the human species, must not be too highly estimated.

been indubitably proved to occur in women. In a "not inconsiderable number" of cases of pregnancy observed by Hohl, which he states were of the "usual duration," he found this to be from two hundred and seventy-five to two hundred and eighty-seven days!* In one hundred and fourteen children born "mature," observed by Dr. Merriman, nine only were born at the end of two hundred and eighty days, ninety-two per cent. therefore of those observed by him were carried beyond this date; of these twenty-two were, by his method of stating the matter according to the number of weeks, born in the forty-first week; fifteen in the forty-second, and ten in the forty-third week; one at the end of three hundred and three; one at the end of three hundred and five; and one at the end of three hundred and six days.† But the correctness of these observations must be doubted, since Merriman's statement that fifty-four "mature" children (almost the half of all the cases given!) were born between the thirty-seventh week and the two hundred and eightieth day, is contrary to all experience, and leads to the supposition that there must have been some error as to the period of conception. On the other hand, that most cautious inquirer, Elsässer, found that in two hundred and sixty cases the pregnancy was seventy-one times (= 27·3 per cent.) protracted beyond the two hundred and eightieth day, up to the two hundred and ninetieth day by 23·8 per cent., up to the three hundredth day by 1·1 per. cent., and up to the three hundred and sixth day by 2·3 per cent.‡ I shall by and by refer more particularly to the very instructive and important cases published by Schuster, and I omit all mention of many statements contained in obstetrical works which coincide with those already related, in showing that pregnancy may perchance be prolonged into the tenth month.

§ 30. Continuation.—Protracted Gestation.

Children who are born after a pregnancy protracted beyond the average time, that is more than two hundred and eighty days, are called late-births (*partus serotini*). The importance of this subject in relation to various judicial matters, such as the legitimate birth of children, with all that may depend thereon, paternity, right of

* *Op. cit.* p. 172. † Med.-Chir. Transactions, 1827.
‡ Henke's Zeitschrift, Bd. 73, s. 304.

inheriting, accusation of adultery, &c., has been recognised from the earliest times, and judicial cases in which these important matters have been a source of contention, because the allegation by the one party that a certain late-born child was conceived at a certain time has been disputed by the other, have for centuries given rise to controversial writings and opinions by medical jurists and faculties in regard to the question of protracted gestation. And the consideration of this subject affords another proof of the absolute necessity that exists for scientific criticism in regard to medico-legal matters. I will give proof how utterly untenable and incredible both the older and more recent cases are, which are ever and anon requoted as confirmatory of the "fact" that pregnancy may be protracted *far beyond the tenth month*, and that it is even possible that it may last for eleven, twelve, thirteen, or many more months, and according to which, therefore, all the statute-books from the Roman one downwards, have established the most objectionable regulations. A woman* was confined eleven months and fifteen days after the departure of her husband, who subsequently died. Nothing is stated as to the condition of the fœtus! The legal agent for the legitimate children disputed the legitimacy of this late-born child, declaring that the mother lived in discord with her husband, that she had once put him in prison, and that he had left her with the intention of going to the East Indies, &c., circumstances which were certainly more than suspicious. The faculty at Halle, however, decided (1727) that it was a case of protracted pregnancy, and for this reason that "a few remarkable, though very rare, cases of the kind are known." (!) I shall now proceed to relate these older rare cases which were appealed to; they are also to be found quoted as authorities by Henke,† who gives no details! In 1630, the faculty at Leipzig declared a child born after an alleged pregnancy of three hundred and nine days not to be legitimate,‡ but the same faculty eight years subsequently declared, without entering into any particulars, that a child given birth to by a widow after an alleged pregnancy of one year and thirteen days, was certainly one of those *qui rarissime et præter naturam accidunt.*§ A man, who before his death was *summe debilitatus*, died on the second of December. On the twenty-fifth of October following—ten months and twenty-three days subse-

* M. Alberti, Jurisprud. medica, II. p. 554.

† Abhandlungen a. d. Geb. der ger. Med. 3 Aufl. Bd. III. s. 308.

‡ Valentin, *Corp. jur. Cas.* 35. § *Ibidem, Cas.* 36.

quently—his widow was confined of a child, of which no more accurate description is given; but this is unimportant (?) seeing that the faculty at Giessen (1689) based their opinion on the following "facts." "Petrus Aponensis says of himself, that he was an eleven months' child; Caldanus says of his father, that he was born in the thirteenth month; Sennert relates a case in which the fœtus was heard to cry within the uterus during the eleventh month, and was very soon thereafter born in the twelfth month; the faculty itself knows one instance of the birth of a girl in the seventeenth month," *therefore* (*sic!*) "the child in question may be held *pro legitimo.*" A woman (case related by Zittmann)*, whose husband had gone on a journey, and was subsequently drowned, was confined after twelve months. The faculty at Leipzig (1675) declared the child to be legitimate, because "since nature can anticipate the usual termination of pregnancy by two whole months, as in the *partus septimenstris*, why should she not also be able to postpone it for two months?" (!). A dissolute wench, who was confined three hundred and twenty-five days after the intercourse in question, brought an action against her alleged impregnator.† The same faculty (1669) declared this child not to be the result of a protracted pregnancy for the following reasons:—"if really, as he states (!!), his intercourse with her was *absque ejaculatione seminis*, and he had no subsequent connection with her, while she had intercourse with other men, also since nothing happened to the strumpet which could account for the child remaining so long in the womb, also *tamen pariendi terminus* at the end of the eleventh month is very infrequent and unusual with us," he is not the father!! *Such are the cases quoted by Henke, as giving the opinion of the earlier authorities*, and which have been copied from him into Handbooks and Encyclopædias. The case quoted by Henke from Ingolstadt (Valentin, Nov., p. 15) is not reported on by the Faculty of Medicine, but by that of Law, therefore I have taken no notice of it here. But I might relate dozens of cases such as the above, if it were the object of this work to display book-learning. But the following little known, though early case, is too precious not to be produced. Petit,‡ the ardent advocate of the possibility of an unlimited protraction of pregnancy, relates the

* *Med. for.* p. 452.

† Zittmann, *Med. for.* p. 227.

‡ Recueil de pièces relatives à la question des naissances tardives. Amsterdam, 1766, 8, p. 56.

following among many other "facts," which the Parisian Academy of Science were not ashamed to admit into their Memoirs. "A woman in the borough of Jouarre was *pregnant for three years* and then produced a stout living boy. About the tenth month she had pains, and lost about three quarts of water, which stopped, however, on her being bled. The history of this fact is testified by the signatures of the burgomaster of the place, one notary, and two surgeons." (Therefore it must indeed be true!!) Petit's opinion, founded upon this "true history," and many other similar ones, is dated the 22nd of January, 1765, and signed by twenty-three Professors of the Faculty and chief medical attendants of Hospitals!—Even the more recent cases are not more capable of standing the test of careful criticism. These are to be found in Henke's Treatise, as well as quoted by every one else. Foderé's wife took pains in the ninth month of her pregnancy (*à l'époque* [*??*] *du neuvième mois*). Forty days later the birth took place (what about the child?). Two years subsequently she again became pregnant, and was forced to part (*sevrer*) with her child. After ten months and a-half she was confined (she also became pregnant while nursing, which always confuses the reckoning of women; had she nursed the former child for two years?) At the end of nine months she "again" (as at the former time) had false pains. The girl to which she gave birth was so small and miserable (*chétive*), that the mother did not know she had been delivered, and the child had to be brought up artificially." (A child alleged to be born after a pregnancy protracted to three hundred and fifteen days falls, so to speak, out of the mother's womb, and requires to be brought up artificially! It is evident that the case is utterly incredible and badly observed!)—Klein reports,* "my wife had pains every day for four weeks at the time we calculated" (this, no doubt, means at the end of her pregnancy?). "Every day I expected the confinement, which happened about four weeks subsequently, and was very rapid. The child was one pound and a-half heavier than my other ones (*sic!*), it was two inches longer, and the fontanelles were *completely closed* (yet the birth of a child such as this was said to have been "*very rapid*"?!). Klein adds, "I also know, quite distinctly, that the Countess of X. was certainly four weeks longer pregnant." It is evident that both of Klein's observations are equally "trustworthy;" but these cases of Klein and Foderé are specially

* Kopp's Jahrbuch, III. s. 252.

deserving of being mentioned here, because they are regarded as peculiarly valuable from being cases of the "wives of physicians," and consequently permitting an accurate determination of the duration of pregnancy; but of this, there is not a single trace to be found in the reports.—Listen to the case of Siebold (related by Henke, *op. cit.*). A peasant woman supposed herself to be pregnant from the date of the last appearance, and subsequent discontinuance of her menses. She consulted a surgeon, whom she permitted to have intercourse with her, since this could no longer hurt her. She was confined precisely forty weeks after this date, though her menses had ceased for twelve weeks previously, "As is frequently observed," adds S., "during the warm season of the year." It is incomprehensible how this case, so correctly estimated by Siebold in the sentence just quoted, has come to be included among cases of protracted pregnancy, since it is evidently (the time of conception being known), a very good example of a forty weeks' pregnancy. All the other cases, collected by Henke, of pregnancy protracted much beyond the average period, give not less scope for criticism; there is not one single instance of correct reckoning among them, nothing but the statements and assertions of women. A (Dutch) case, related by Salomon (*op. cit.*) seems to be both simple and instructive, and yet it is utterly unworthy of credit. A woman expected her confinement in November 1807, her menses "not having been seen since the 3rd of January," wherefore, she believed herself pregnant "*from that date.*" In the first days of June she felt the fœtal movements. "In the beginning of November preparatory pains set in," but not till "the 26th of January was she delivered of a dead child, which weighed ten pounds and one-quarter." If we assume then, that as usual, the fœtal movements commenced to be felt about the middle of pregnancy, then the child was born at the end of—three hundred and seventy-six days; if however, from the ambiguity of the expression "from that date," we assume, that she was still menstruating on the 3rd of January, and probably upon the 8th of January, then the child was born at the end of—three hundred and eighty-three days: or if finally, we suppose that she had only expected her menses on the 3rd of January, and was perhaps impregnated about the middle of December, then her pregnancy must have been protracted for—four hundred and seven days! In order to give (Germany) the benefit of the most recent observations, I shall finally relate a series of cases that have occurred in England, and have

been published by Taylor,* cases which are alleged to prove a protraction of pregnancy into the eleventh, ay, even into the twelfth month. Dr. Murphy has been peculiarly fortunate in meeting with these cases, since of one hundred and eighty-two confinements observed by him, no fewer than ninety-six, exactly one-half, occurred beyond the fortieth week, and twenty of these in the forty-fourth and forty-fifth weeks after the commencement of pregnancy. Particular value is placed upon the instance of the longest duration of pregnancy, namely, three hundred and fifty-two days, and still three hundred and twenty-four days, after subtracting twenty-eight days from the period of the last menstruation. It is expressly added, that the date of the last menstruation was recorded *before* parturition took place, to prevent the possibility of error. When I state, however, that this, as well as all Murphy's other cases, *occurred in hospital practice,* consequently in unknown women, the duration of whose pregnancy Murphy had no means of accurately ascertaining, I thereby express all that can be truly said in criticism of these cases, and give the measure of their trustworthiness. We are here obliged exclusively to rely upon the *statements* of the pregnant women themselves, and besides the manifold and obvious reasons which may induce clinical cases of pregnancy (married as well as unmarried) intentionally to mislead as to the reckoning of their pregnancy, every one knows, how many and how frequently, *bonâ fide* errors occur in this respect. The case of Chattaway, also published by Taylor, is more remarkable; she was a healthy farmer's wife, aged thirty-six years, and her confinement took place after a pregnancy of three hundred and thirty days. She had menstruated for the last time in (?) December 1855, and felt fœtal movements in the beginning of April. About the middle of September she had labour-pains, with a muco-sanguinolent discharge, and on the 19th of November, 1856, she produced a child "of the average size." Taylor is of opinion, that even after subtracting twenty-eight days for the last menstrual period, the duration of pregnancy is still found to have been prolonged for three hundred and thirty days. But the case admits of another mode of computation: if we suppose that the last menstruation "in" December occurred about the end of the month, and further, that the conception took place towards the end of January, then we have only a pregnancy protracted for about three hundred days, which is nothing incredible. Moreover, nothing

* Med. Jurisprud. 6 Ed., London, 1858, p. 625, &c.

is said as to the usual menstrual cycle of this woman: nothing (so necessary for a critical estimation of the alleged perception of fœtal movements at so early a date) as to whether the woman was a *primipara*. In what other science, may I ask, has there existed for centuries so total an omission of all critical inquiry as I have just proved to exist in forensic medicine, precisely the one of all others, in which the phenomena observed require to be most sharply criticised!

§ 31. Continuation.—Duration and Diagnosis of Protracted Gestation.

Nevertheless it is undeniable that gestation may be protracted beyond its average duration of from two hundred and seventy-five to two hundred and eighty days (§ 29). But all the teachings of physiology and the most trustworthy observations possible agree in setting certain limits to this duration. The connection and dependance of the birth upon a cycle of ten catamenial periods has been recognised, as already remarked, from the earliest times. But Cederschjöld has the merit of having first pointed out that as the interval between one menstrual period and another is not unalterably the same in all women, but that individual variations are of by no means rare occurrence, so there are corresponding individual limits within which the duration of gestation may, and, as observation has proved, actually does vary, always holding fast to the physiological fact that the birth takes place at the tenth menstrual period. Thus, in those women from A to X whose menses recur every twenty-eight days, $10 \times 28 = 280$ days = the duration of gestation; in Y, who menstruates every twenty-nine days, $10 \times 29 = 290$ = her gestation; in Z, whose menses recur only every three hundred days, $10 \times 30 = 300$ days = duration of her pregnancy. Schuster has illustrated this question in a most valuable manner; he has continued Cederschjöld's observations, and in his admirable treatise,* to which I refer, he has given four cases, two of which referred to his own wife. Her menses recurred every twenty-nine or thirty days. The first pregnancy, whose course is accurately described, ended on the two hundred and ninety-sixth day, the second continued for exactly ten full (individual) menstrual periods, that is, three hundred days.

* Henke's Zeitschr. Bd. 57, s. 1, &c.; in which also Berthold's views (über das Gesetz. der Schwangerschaftsdauer, 1844), which agree in the main with Cederschjöld's, but modified, are thoroughly refuted.

A healthy and vigorous woman, whose menstruation was of the twenty-nine days' type, was confined on the two hundred and eighty-seventh, and the next time upon the two hundred and eighty-eighth day.—In accordance with all that has been here set down as to this matter, the following dogmata must be regarded as sufficient for our guidance. 1. The usual duration of pregnancy is from two hundred and seventy-five to two hundred and eighty days. 2. Pregnancy may, however, indubitably be protracted beyond this, and that *even as far as the three hundredth day.* 3. Cases in which pregnancy is alleged to have been *protracted considerably beyond this, even to the eleventh, twelfth, and thirteenth month, have never been determined by accurate observations,* and allegations of this kind in any individual case are therefore completely *inadmissible.* Hence it follows that the statute-book has assumed a very proper *terminus ad quem,* and science has no reason to desire any alteration of its regulations.

The diagnosis of any individual case will be always a very difficult task. Circumstances which many authors assume to be of importance in regard to the decision of the case, and which they suppose to speak for the truth of the allegation of a delayed confinement, such as the moral reputation of the party concerned, early notice of pregnancy, &c., deserve no consideration at all, as every one knows who knows anything of life, particularly that kind of life represented in the Forum. We cannot allow any value to those actually scientific reasons based upon the state of health of the woman who had been pregnant, and only a negative one to the assertion that the signs of over-maturity in the fœtus prove its birth to have been delayed. That anæmia, hydrovarium, depressing mental emotions, &c. &c., should produce a prolongation of pregnancy is so little proved by experience that we would rather expect that these, or similar ætiological causes, would put a premature end to gestation. And the over-maturity of the fœtus is a most variable idea. I have* proved by my own observations on two hundred and forty-seven mature—that is, born at the right time—children, that the weight of these may vary from five or six up to ten pounds, and their length from sixteen to twenty-two inches; and precisely similar variations may occur in regard to all the signs of maturity, as has been long generally known. With what amount of scientific conviction, therefore, could a man declare a child of ten or eleven pounds, &c., to be one whose birth had been delayed? But I hold that the maturity of the child may be of

* Bio-thanatological Division, Special Division, § 80, p. 18, Vol. III.

great diagnostic value negatively; and I would not hesitate to declare such a child as that of Foderé (p. 366, Vol. III.) which "was so miserably small when born that the mother did not know that her labour was over," was not "over-mature," or the product of a protracted gestation. In fact, there are only three scientific points of any value, and where these fail the medical jurist there is nothing left him but to unfold his difficulties to the Judge, and to leave him to decide according to the statutory regulations, which is, moreover, as I have already remarked, what is almost always done. I refer to —the signs of labour, pains, &c., at the normal end of the pregnancy, which have certainly been observed by careful observers;* secondly, and specially, the removal of all doubts as to the procreative capacity of the alleged father at the alleged time of conception. I may refer to the case observed and described by myself,† in which a man aged eighty-two, who for years had laboured under carcinoma of both testicles, was alleged by his wife and former cook to be the father of a posthumous child alleged to be the product of an eleven months' gestation. The case of Louis there referred to was completely similar. A man aged seventy-two had married (1759) a woman aged thirty, who, after her husband had lived with her four years without having any children, and had died after six weeks' severe illness, at the age of seventy-six, brought an heir into the world after a gestation of three hundred and seventeen days, the commencement of which dated from the day of the husband's death! In such, and in similar cases, where the capacity of the alleged father for procreation is indubitably no longer to be supposed, we must assume the case to be a cheat, that is, that it is impossible it can be one of protracted gestation. The third point for consideration is, the individual menstrual period of the mother (*vide* above). Alas! in medico-legal cases, this only gives rise to a fresh difficulty, because it is impossible in these cases to obtain any information free from the suspicion of untruth.

§ 32. Superfœtation.

The subject of superfœtation is to a certain degree connected with that of protracted gestation. Since the days of Aristotle, the im-

* *Vide*, among others, the case related by Dr. Thortsen, of his own wife, in Casper's Wochenschrift, 1843, s. 344, and that of Hayn, *ibid.* s. 771.

† Vol. III. § 81, p. 31.

pregnation of a woman already pregnant has been termed superfœtation, superfecundation,* and the physiological possibility of this has been just as often disputed as asserted from the earliest times down to the present day. In regard to this matter it is impossible to deny that in itself it possesses not the slightest practical medico-legal interest, since there are positive statutory regulations for all such cases as may seem to be doubtful, which are thus removed from the jurisdiction of the forensic physician; and this explains the fact of there having been only two or three judicial cases of the kind related by earlier authors, and that not one single case has ever come before me. For instance, if a married woman produce two children, though within different periods, and the husband disputes the legitimacy of one of them, according to every statute-book the legitimacy of all children born during the subsistence of the marriage is presumed, when the birth takes place within the statutory time, &c. But also in this matter, as well as in that of protracted gestation (*vide* p. 361, Vol. III.), we must not deprive science of her right of independent investigation, and her privilege of enlightening the legislature, when she can do so by reasons based upon scientific observations. Everyone knows that two or more ovula may come to maturity and be thrown off simultaneously, and may therefore be simultaneously fecundated, as is proved by twin and triplet pregnancies, &c. The passage of the human ovulum through the Fallopian tube into the uterus may, however, as we now know, occupy from eight to twelve days; and the subsequent fecundation during this period of a second ovulum can no longer lie under any physiological doubts. But, for similar reasons, the supposition of any superfecundation at any later period (*e.g.*, months) after the first impregnation is perfectly untenable.† Soon after impregnation the os uteri is sealed by a

* Some term the extra impregnation at an early period superfœtation (super-conception), and at a later period of pregnancy, superfecundation; but there is no utility in this subdivision.

† *Vide* the article on Superfœtation, by Bergmann, in R. Wagner's Handworterb. d. Physiol. III., where the idea of superfecundation at a late period is also very properly rejected. We have to thank the care of Bergmann for a new proof, in addition to the many similar ones already given, of how cases in forensic medicine are copied as "quotations," without any examination. He says, *op. cit.* p. 140, *note:* "I must not let this occasion pass without pointing out an error which has crept into Kopp's Jahrbuch, Bd. III., and from it into several other German works, particularly Henke's Lehrb. § 199, *note*"—(and his Abhandlungen, Bd. II. s. 28):—"But few

mucous plug, and remains closed during the whole course of pregnancy. Soon after fecundation the uterus becomes congested, its walls thicken, the decidua is formed, &c., and thus vital changes take place in the uterus, completely opposed to its condition when unimpregnated; and when once these changes have occurred, one can hardly imagine the possibility of a fresh conception occurring.* But these reasons would, of course, cease to avail if confronted with *credible* observations of the opposite nature, that is, cases of late—after months of pregnancy—superfœtation actually and indubitably observed. But no such cases are on record, though many narratives and histories of supposed instances of superfœtation have been published from the days of Zacchias downwards. The oft-quoted "observation" of Delmas, to which I have just referred in the note, was perfectly evidently based upon the self-deception of a dissolute woman, who had illicit intercourse with several men, and who *thought* (!) herself four weeks gone in pregnancy, if she did not actually lie and falsify all the data; and in Germany the case—by a misprint—was rendered miraculous! Another and not less oft-quoted case, is reported * by Foderé, as related by a Dr. Desgranges, and *seems* more truthful. The wife of an herbalist, Raymond Villard, was confined of a girl on the twentieth of January, 1780; she had neither lochia nor milk-fever. Three weeks subsequently she felt fœtal movements, and her abdomen continued to increase in size. Desgranges declared her to be pregnant, and on the sixth of July, 1780, five months and sixteen days after her first confinement, she produced another girl, perfectly mature and healthy. The confinement was normal, and two years subsequently the mother produced the two children in health before two notaries at Lyons, "in order to certify this fact in a legal manner; and as she stated in this notarial attestation, partly to prove her gratititude to Dr. Desgranges, and partly to give women who may find themselves in a similar

readers may have occasion to ascertain, by personal reference to the Annales de la Soc. de Méd. de Montpellier, that the case by Delmas of a woman who, when four or five months pregnant, was said to have conceived again to a negro, first assumed this fabulous form in Kopp's Jahrbuch. In the original it is stated that the woman *thought herself four or five weeks pregnant* when she received the embraces of the negro. It is also probable that even in this she was deceived or lied, since the negro child was much stronger than the other, and the woman confessed that she was in the habit of having constant intercourse with a white man."

* Devergie, *op. cit.* p. 471.

predicament, and whose husbands may be deceased previous to the birth of both of the children, a precedent *en faveur de leur vertu* and the legitimacy of the child." For my part, I confess that this remarkable proceeding of this woman, so "virtuous," and so grateful to her doctor for having delivered her (!), renders the whole case perfectly incredible. Without mentioning that we do not learn anything for certain as to the bodily condition of the two children when born, we are justly entitled to ask, What could induce a married woman, under ordinary circumstances, to take such an unheard-of step? The reasons alleged by her bring to mind the old proverb, *qui s'excuse s'accuse*, and make the motive, purposely to make her husband quite certain, more than probable! Another "observation which seems to Henke to possess probative value,"* is the much-spoken-of case of Maton. The subject of it was an Italian lady, who was confined of twins, both previous and subsequent to the birth in question. On the twelfth of November, 1807, she produced a male child, of "proper maturity;" and on the second of February, 1808, that is, eighty-one days subsequently (not eighty-six as Henke reckons), she produced another male child, "perfectly mature." (Nothing is said in this case about the placenta, umbilical cord, &c., any more than in any of the other cases.) It is evident that this case, of a woman who bore twins twice, is nothing else than a third conception of twins. The "proper maturity," which is an uncertain expression, might very well be possessed by the first-born child at the end of, say two hundred and ten days, and as the other twin was born eighty-one days subsequently, it, as a late-born child of two hundred and ninety-one days, would certainly be "perfectly mature," and the whole case would resolve itself into what has been so often mistaken for superfœtation, namely, a twin pregnancy, one of which (alive or dead) has been born prematurely and the other some time after, a circumstance which every obstetrician must have observed, and which is described in every work on midwifery.—These are the most famous "cases" of superfœtation,† and certainly not one of them is favourable to the supposition of conception occurring months after the commencement of pregnancy. But there are still a few cases which are apparently more instructive, those, namely, in which children of different races are produced shortly after one another by the same

* Abhandl. *loc. cit.* p. 40.

† A case related by Eisenmann has been critically disposed of by Devergie, *loc. cit.* p. 470. I refer to his criticism.

mother. I have already considered (p. 372, Vol. III.) the case of this kind related by Delmas. Another oft-quoted case related by Buffon is evidently falsified, because a white woman cannot give birth to a white and a negro child, but only a mulatto, should she, like this South Carolinian, admit the embraces of a white husband and a negro shortly after one another. Precisely the same may be said of the case of the white American maid-servant,* who produced twins, one white and the other black; while two other cases related by Henke, *loc. cit.*, of the birth of twins, one black and the other mulatto, and one white and the other mulatto; a similar case by Hille,† and the like by Attaway,‡ and other cases of different-coloured twins, independent of mistakes which may be readily made,§ are not at all wonderful, since, as I have already shown, a second intercourse following shortly after the primary one may result in the impregnation of two simultaneously maturated (twin) ovula, and this even though the two fathers may be of different races. In the case of any future instance of the birth of a child of different race, after the lapse of any considerable time, no one would hesitate to disbelieve the statements of the mother, whether married or not, since in the children produced by her she gives the most authentic proof of her dissolute conduct and of her having had intercourse with several men, and since in every case she may have a hundred reasons for falsifying the truth. Who would imagine a case such as this: a woman, after being long married without children, and desirous of feigning the child of another to be her own, becomes pregnant, and is at last forced to carry out the fraud, and to exhibit both children as her own, pretending them to be the result of conceptions at different periods—superfœtation? And yet such a case has occurred!‖

We must now consider the possibility of superfœtation occurring in cases where the uterus is double, which has been doubted. These extremely rare cases have even been *à priori* declared to be impossible, because a *membrana decidua* is said to be formed even in the cavity of the second uterus, when once pregnancy has occurred (? A. Meckel); because the empty uterus is closed by the vaginal wall forced against

* Dewees, *vide* Henke's Abh. *loc. cit.* p. 29.

† Casper's Wochenschrift, 1843, No. 4.

‡ Henke's Zeitschrift, 1855, s. 273.

§ *Ibidem*, in an admirable treatise by Albert, s. 272.

‖ F. B. Osiander, Handb. d. Entbindungsk, i. 2 Aufl. Tübingen, 1829 s. 305.

it by the distention of the pregnant one (F. B. Osiander); because, where the vagina is double, intercourse through one of them is prevented by its narrowness (Metzger), &c.,—reasons which can be no longer accepted as sufficient. Bischoff has proved that both horns of a divided uterus may be filled with seminal animalcules by one coitus, and thus a simple twin pregnancy in a double uterus is possible. But of course the reverse of this is not excluded, and credible facts come again to be inquired after. A case of Cassan is given as such in all recent periodicals and books. The original lies before me,* and it says, "a woman, aged forty, already the mother of one child, produced on the fifteenth of March, 1810, a small female child estimated (*sic!*) to weigh about four pounds. As the abdomen continued of a considerable size, and Madame Boivin" (the reporter of the case and well-known accoucheur in the Maternity at Paris) "suspected the existence of some foreign body in the uterus, she made a manual exploration of the cavity, which was much contracted, but detected nothing. When the tumour, which lay on the right side, was gently moved, the cervix uteri moved along with it. During two months the woman continued to feel movements within this tumour, which were also perceptible to Madame Boivin. On the twelfth of May the woman gave birth to a daughter, which was estimated to weigh about three pounds, was small and pale, and scarcely breathed. This person, who had for long ceased to live with her husband, assured Madame Boivin that she had only three times in two months, on the fifteenth and the twentieth of July, and on the sixteenth of September, 1809, had connection with the cause of her shame, as she called him." "In this case," adds Dr. Cassan, "it is proved to conviction (*demontré jusqu'à l'evidence*), that the product of the last conception had occupied a cavity different from that of the first, since, after the extrusion of the first child, its cavity was perfectly empty." On the contrary, I hold that it is rather too great a strain upon scientific criticism to endeavour to pass off so insufficiently described a case as an instance of double pregnancy in a double uterus! No one has taken the slightest trouble to analyze it. We do not learn anything as to the state of the child first born, whether it was alive or dead; nothing as to the condition of the vagina, the os uteri, the placentæ of both children, which were not even weighed, to say nothing of noting the signs of maturity, &c.!

* Recherches anatom. et physiol. sur les cas d'uterus double et de superfétation. Par A. L. Cassan. Paris, 1826, 4, p. 36.

And without a thought as to the possibility of a mistake by so heedless an observer as this midwife, would it be right to accept the simple conclusion that a double uterus existed, as "proved to conviction?" When I explain the case thus, that the intercourse on the sixteenth of September was followed by a twin pregnancy, that the first twin was born on the fifteenth of March, at the end of one hundred and seventy-nine days (six months), and the second child on the twelfth of May, at the end of two hundred and thirty-seven days (eight months), and that the midwife was mistaken in the supposed result of her examination after the birth of the first child—then I hold that this explanation carries with it not less "conviction" of its truth, and is more consonant with daily experience than the supposition of a double uterus. It is quite otherwise with the case reported by Generali,* of a woman who, on the fifteenth February, 1817, gave birth to a living, apparently mature, male child, and who, four weeks subsequently, on the fourteenth of March, produced a second living boy. The first child lived forty-five, and the second fifty-two days. This woman died in 1847, and in her case at least the dissection proved the existence of a divided uterus, each half provided with one Fallopian tube. Two other cases related, *loc. cit.*, by Dugès and Billengren, in which the existence of a divided or double uterus was supposed to be ascertained by manual exploration, not by dissection, are not equally convincing with the case just related, but rather belong to the same category as the case of Cassan.

Finally, the possibility of superfœtation has been spoken of in relation to those cases in which an intrauterine pregnancy occurs during the retention of an extrauterine fœtus. These cases are of no medico-legal importance, since the fact of an extrauterine pregnancy is seldom or never ascertained with forensic certainty; the fœtus can never be born alive,† &c. A woman thus pregnant is to the forensic physician nothing else than a diseased pregnant woman. In regard to superfœtation, the following principles may therefore be laid down:—1. By far the larger proportion of all the known cases

* Medic. Vereinszeitung. Berlin, 1850, No. 43. Taken from the *Bulletino delle scienze med di Torino.*

† A new and very interesting case of this kind is related by Dr. Johnston, in the Ed. Med. Journal, for 1856, p. 137, and is quoted in the Prager Vierteljahrschrift, 1857, III. s. 59. A woman, aged twenty-eight, conceived and gave birth to a healthy and mature child during the persistence of an extrauterine pregnancy, which was ultimately brought to a close by the escape of the bones of the fœtus through the rectum.

of alleged superfœtation are based upon *intentional or self-deception*. 2. In particular, a large proportion of them are nothing else than *cases of twin pregnancies*. 3. That a woman who has already conceived may be again impregnated within a short period, at the latest a few days, *cannot be denied*, for scientific reasons. 4. The impregnation of a woman who has been already pregnant for weeks or months *has not yet been indubitably proved*. 5. The possibility of a double impregnation, where a double uterus exists, cannot be utterly denied.

§ 33. Unconscious and Concealed Pregnancy.

Since the Prussian and all the more recent statute-books have ceased to threaten with punishment the mere concealment of (an illegitimate) pregnancy, the question whether a person may be pregnant without knowing it has lost almost all its practical value for forensic medicine, which it only retains in relation to cases of disputed abortion, in estimating the amount of blame judicially attachable to any one accused of having secretly disposed of a fœtus, where she alleges (as is so frequently done), that she was surprised by the birth, which she had not anticipated, and in a few civil cases. In every case, however, this is a matter easy to be decided. We must, in the first place, distinguish between intentional and unintentional concealment of pregnancy. Like every other medical man, I have in the course of my practice very often seen married women, who from large experience were very well acquainted with the signs and effects of pregnancy, and who had no desire to have such matrimonial blessings continually renewed, incredulous, for a hundred reasons, as to their state, up to the very last month of their new pregnancy, and prepared with a plausible explanation for each fresh symptom. At one time conception had occurred during suckling, which women so incorrectly hold to be impossible; at another time, the new pregnancy happened when it had long ceased to be dreaded, after a pause of many years—after so many as thirteen years in one of my own cases. Now the signs of pregnancy are obscured by the coexistence of disease; and then the intercourse in question is regarded as "impossible" to have impregnated, and in this matter the most experienced matron is just as liable to error as the most inexperienced maid; while, at still other times, important irregularities in the catamenia have disturbed the reckoning, &c. Numerous cases of

this nature are recorded in the literature of this subject. But in all such cases of pregnancy *bonâ fides* existed, and it is humanly and credible, that a young girl of sixteen should quite innocently carry about her distended abdomen, because, as she finally confessed, "the Baron N., who had conducted her home from a ball, and had been with her only once, had solemnly assured her that the first time never had any result."* But all ingenuousness and *bonâ fides* cease the instant the case becomes a judicial one, a case where different interests clash, and the forensic physician is engaged with it. For the most experienced as well as the most inexperienced will speak *malâ fide*, when in defence of her interests she declares, that she knows not, or at least pretends not to know that she—even only once—has exposed herself to the causes of pregnancy! In the course of the precognitions in the criminal or civil case, ay, even from the mere consideration of judicial observation being continually directed to the condition of her body, the sum of the remarkable alterations in her corporeal state during the progress of pregnancy, must become known to her in their true signification, and remembering the *ante-acta*, the belief of the possibility of a pregnancy must more and more force upon her the conviction of its actual existence. The former Prussian statutes, therefore, were not unjustifiably harsh in denying, that a woman after the completion of the thirtieth week of her pregnancy could be any longer ignorant of her condition, and the forensic physician will in most cases not err, and will be able to answer on his conscience, when he assumes that at least during the last third of its continuance pregnancy is no longer unconscious, that is, that the concealment of it is not unintentional. The only possible exceptions to this may be where there is no recollection of any act of impregnation, that is, in those rare instances of impregnation during a state of unconsciousness (p. 298, Vol. III.), or in feeble-minded or idiotic women. And as, in every matter, individual cases occur in medico-legal practice of such anomalous constitution as to constitute an exception to the general rule, so also, in relation to this subject, there may be a concurrence of circumstances in favour of the pregnant woman. Thus, in a case which, many years ago, was the occasion of *superarbitrium* by the "Scientific Commission," a young and very weak-minded girl was alleged to have concealed her pregnancy up to the time of delivery unintentionally, because it was unknown. The reasons which induced

* Gadermann, in Henke's Zeitschrift, 1846, 3, s. 87.

the Superior Medical Board to regard her assertion as justified were as follows:—The girl was constantly assured by her seducer, "that he had not come near enough to her to make her pregnant;" that as a *primipara* she had no experience in this matter; that it was proved that she had caught a violent cold while standing in a river washing; that she had blamed this cold for the cessation of her menses, which occurred shortly after, and for the enlargement of her body, &c.; and finally, that the surgeon to whom she had applied on account of this, completely confirmed her opinion, and continued to give her remedies to bring back her catamenia. I think, therefore, that the forensic physician will have no difficulty in any case in deciding this question, which is of by no means so frequent occurrence as formerly.

Besides those matters already treated of, the longings of pregnant women are also closely connected with the subject of pregnancy, but I shall return to this matter by and by (§ 78).*

* Since those cases of disputed pregnancy which have come before me judicially merely required the determination of the doubtful diagnosis, and presented nothing peculiar, I do not require to relate them here.

PART THIRD.

DISPUTED DELIVERY.

Statutory Regulations.

Vide the Statutes referred to at pp. 1 and 2, and p. 34, Vol. III., *and also the following:—*

Penal Code, § 138. *Whoever substitutes or intentionally exchanges a child, or in any other way intentionally alters or suppresses the personal condition of another, will be punished with penal servitude for not less than ten years.*

Ibidem, § 183. *Whoever exposes a child under seven years of age, or intentionally leaves such a child in a helpless condition, will be punished with imprisonment for not less than three months.*

If death has been the result of such exposure or forsaking, the punishment shall be penal servitude for not more than ten years.

If this treatment has been employed with intent to kill, then the punishment of murder, infanticide, or attempt thereat, is applicable.

§ 34. General.

The fact of delivery may be doubtful, and may become the subject of investigation by the forensic physician in all those cases in which the previous pregnancy is disputed, which is either presumed to have been pretended or concealed (§ 25, p. 349, Vol. III.). I have already referred to the reasons why cases of disputed delivery are of much more frequent occurrence *in foro*, than cases of disputed pregnancy. The subject of concealed delivery is of far more rare occurrence in regard to civil, than to criminal cases. In regard to the first, this question comes to be considered in all cases where the pregnancy has been disputed, to which is added, in the case of delivery, the question whether a child alleged to be born, may not be merely a supposititious one (§ 40). In criminal cases, in every country except Prussia, wherever it is suspected that an unmarried woman has secretly given birth to

a child,—for all the more recent statute-books, except the Prussian, threaten with punishment the concealment of delivery, or the giving occasion to an unassisted delivery,* so that where pregnancy has been denied (because concealed) the case must be investigated. But in Prussia, also, in spite of the abrogation of the punishment for concealment of delivery, such investigations are of continual occurrence, since the penal code threatens with punishment the secret disposal of a dead body—such cases being most frequently found in practice to be the bodies of newborn children—and also the exposure of children; and women who have been suspected of any of these crimes frequently deny both it and also the fact of their having been delivered at all. Further, in many other cases, the investigation and determination of a concealed delivery is required when infanticide or fœticide has been committed or is suspected, as these cases are sometimes commenced by an utter denial of maternity altogether on the part of the accused. Finally, in these cases there occurs a number of important secondary questions, which are closely connected with the subject of delivery, such as questions relating to injuries alleged to have been received by the child during the act of delivery, or to delivery while unconscious, self-delivery and its consequences to the child, delivery in the standing posture, the being surprised by the birth, the fall of the child on the floor at its birth, &c., questions which are omitted now because they have been already fully considered.†

§ 35. Diagnosis of Delivery.

It is very well known that it is much more easy to answer the question, Has this person actually given birth to a child? when the examination is made within a few days of the actual or alleged confinement, than when it is required to be made after many weeks, months, or a much longer time. A series of most excellent symptoms disappear more or less rapidly after the delivery, and consequently cannot be employed in making the diagnosis at a later period, whilst others certainly remain indelibly imprinted on the female body. Though, in general, the determination of a disputed delivery is thus one of the easiest tasks in forensic medicine, yet ex-

* Häberlin, *loc. cit.* p. 66.

† *Vide* Bio-thanatology of Newborn Children in the commencement of this Volume (III.).

perience teaches us that in not a few cases this is not quite such an easy matter, and that it is sometimes perfectly impossible. It is not easy to ascertain the fact of a delivery when the fœtus has been born at a very early period, or even within the first four or five months, and when, besides, a long time has subsequently elapsed previous to the investigation; and it is perfectly impossible to determine the matter in those cases which so frequently come before us, in which a certain delivery is in question, that is when it is required to determine whether the woman, it may be months previously, has given birth to a child upon such and such a day, while she denies this delivery, but confesses to having previously given birth to one or more children. Because it is not possible with any certainty to distinguish the results of one delivery only from those of several by an investigation of the changes on the body, specially because the various individual bodily peculiarities have in this respect a very disturbing influence, such, for instance, as the greater or less amount of relaxation of the abdominal parietes present. In a very obscure case (CXIV.) which I had to investigate, a married woman, aged forty-eight, had accused an old and hitherto irreproachable midwife, aged seventy-five, of having forcibly caused her to abort in her three last pregnancies, the last of which was said to have happened two years previously. Both women were imprisoned. The midwife and the woman's husband denied all knowledge of the matter. The woman had given birth to seven mature children, was now ailing and aged, her breasts, abdominal parietes, and genitals, exhibited the results of these numerous deliveries, but not a trace of any injury, and we were forced to declare that the medical investigation of this woman's body was not capable of being used either in support or in refutation of the accusation. (During our repeated examinations, however, we observed visible symptoms of mental disease in the woman, and we subsequently found her to be actually mentally diseased and possessed with the fixed idea of this fœtal abortion, not a trace of which was discovered in the course of the investigation. The innocent old midwife, however, died in prison!)—The signs of delivery may be divided into transitory and persistent, of which the former alone prove the delivery to have been recent, while the latter may also be employed as evidence of delivery that has taken place years ago.

§ 36. CONTINUATION.—*a.* TRANSITORY SIGNS OF DELIVERY.

1. Signs of *general indisposition*—such as a remarkable paleness or redness of the countenance, debility, uncertain walk, moist, warm skin, excitement of the pulse. These signs are certainly observed in a large proportion of all cases of delivery in private practice during the first twenty-four, forty-eight, or sixty hours; in medico-legal practice other conditions, however, interfere, and these signs lose their value. Much depends upon idiosyncrasy, position, manner of life, &c.; and to this we may add, that the woman who has been secretly delivered, and has an interest in still concealing the birth, knows how to overcome, by the firmness of her will, her debility and tendency to faint, and this all the more easily, that the party concerned is usually a young, vigorous, and healthy person of the lowest class, who are, moreover, not in the habit of suffering so much from the effects of delivery as the weakly and pampered ladies of the higher classes. Besides, it happens, specially in these cases, that from the very nature of the matter the forensic physician very rarely is or can be in a position to undertake the examination of the woman at this early period, in which alone these alterations are observable.—2. *After-pains.* As a means of proof these may be regarded as non-existent by the medical jurist, for besides that they scarcely ever occur in *primiparæ*, and even in *multiparæ* are only felt during the first few days after delivery, and therefore during a period when the examination is very rarely undertaken, the mere statement of the woman who has been delivered, that she has or has not felt after-pains is, as a purely subjective assertion, of not the slightest value in judicial cases.—3. *Turgesence of the breasts*, which is also evinced in delicate, fair women by the appearance of bluish venous cords coursing through the skin of the breasts, *milk-fever*, and *milk* in the breasts. Of these important signs we may omit all reference to the milk-fever, because it occurs within the first forty-eight or seventy-two hours, and therefore in most cases it has ceased long before the forensic examination takes place. Moreover, it is well-known that the secretion of milk in many parturient women is wholly unattended by any appreciable feverish reaction. The turgescence of the breasts may be very deceptive in young, firm, and stout women, and this all the more that the forensic physician has generally for the subject of his examination a person whom he has never before seen. On the

other hand, the appearance of milk in the breasts, which may be easily ascertained, even on the dead body in suitable cases, is always a most valuable criterion of the occurrence of delivery, though indubitably milk has also been found in the human breasts, and those of all the mammalia, without there having been any previous delivery, not only in new-born children, but also in virgins, in widows who have long ceased to bear, and even in men. But such cases are, on the whole, but very rare exceptions, and can be easily recognised as such in any given case by the complete absence of all the other signs of delivery. Every doubt will also be removed by a sufficiently early examination, that is, within six or eight days subsequent to the birth, when the breasts contain only colostrum, which contains a much larger amount of fat, milk-sugar, and the saline constituents of milk than milk itself, and is yet much more watery, and opalescent, and exhibits under the microscope* epithelial débris and the peculiar colostrum-corpuscles, a conglomerate of small fatty particles held together by an albuminous substance. That, moreover, the non-discovery of milk does not prove that there has been no delivery, needs no remark, as it is very well known that in those who do not nurse, as is almost always the case in those women who require to be judicially examined, the secretion of milk very speedily, often within a few weeks, ceases entirely (*vide* in regard to the breasts, § 37, No. 4).—4 *The Lochia*, that is an excretion from the genitals, which for three or four days on the average is bloody, then for just so long like the washings of flesh, or like yellowish-green purulent matter, and finally, a pure milky-like mucus, which flows for several—four or five, weeks, or for less in those who do not nurse. The bloody lochia contain numerous blood-corpuscles, ciliated, cylinder, and pavement-epithelium, true pus-cells, and fatty globules, but no fibrine. The latter phenomenon may be a source of mistakes, in so far as immediately after delivery a great quantity of pure blood (therefore containing fibrine) escapes from the torn uterine vessels, and mingles with the lochial discharge; while, on the other hand, the absence of fibrine and the other diagnostic microscopic appearances are very valuable in cases of intentional soiling with human or animal blood where delivery has been simulated. The decision was more difficult in an important criminal case, the

* Good representations of milk and colostrum-corpuscles are to be found in O. Funke's Atlas der physiol. Chemie, 2 Aufl. Leipzig, 1858. Plate xv. Fig. 1 and 2.

particulars of which are unknown to me, in which a foreign tribunal sent me a woman's shift for my examination and opinion, whether the deep sanguineous stains upon it were the result of menstruation or delivery? Fibrine was distinctly recognised in the dried blood-stains; but this of itself was not decisive, and there is, moreover, no diagnostic distinction between menstrual and lochial blood.* Only the appearance of the blood-stain, which seemed to have arisen from a stream of blood, cause me to give it as my opinion that it was more probable that this stain had been caused by a delivery than by menstruation. When the lochia appear like the washings of flesh, and subsequently, when they become milky, the blood-corpuscles are found gradually to disappear, and the pus-cells and elementary granules to lessen in number. From the deceptive similarity of the milky lochia with leucorrhœa, the one may very readily be mistaken for the other; but the bloody or dirty sanguinolent lochia of an earlier period, that is, of the first six or eight days after delivery, may be recognised with perfect certainty, and much more easily than by the microscope, by its perfectly peculiar odour which cannot be mistaken for anything else; and as there can be no mistake possible in this matter, since there is no disease of the genital organs in which any similar specific secretion occurs, so this primary lochial discharge must be regarded as a perfectly certain diagnostic proof of recent delivery.—5. *Intumescence of the labia majora, dilatation, relaxation, and increased temperature of the maternal vagina* are signs of subordinate importance, and of little value for the medico-legal diagnosis, since they disappear by retrogressive metamorphosis within the first few days after delivery, that is to so say, before the examination generally takes place, and, moreover, they may be wholly absent in premature births.—6. *The uterus* presents many points of importance for the diagnosis. For two or three days after delivery the uterus may be felt like a round ball rising above the pubis; after the lapse of six or eight days it is found to be retracted within the pelvis. After this time, also, we can no longer feel the cervix uteri, which hangs down into the vagina for the first two or three days after delivery, and the os uteri is so rapid in its retrogressive changes that though for the first few days it is tolerably widely open, yet within a week it is usually completely closed, and it now maintains the circular form

* This may be of much importance in a case of doubtful abortion. ' *Vide* joint opinion by Adelon, Le Canu, and Moreau in the Annales d'Hygiène, publ. 1846, i. p. 186.

which it has assumed during (the first) pregnancy. It cannot be denied that these so-called uterine signs are also to be found in certain pathological conditions of the organ, but nevertheless they are of the utmost value when taken in connection with the other diagnostic points. By bestowing a little care in considering these phenomena, the forensic physician can have no difficulty in deciding with certainty in any case of disputed recent delivery, provided he be enabled to examine the party concerned within the first six or eight days after the real or pretended delivery.

§ 37. Continuation.—*b.* Persistent Signs of Delivery.

The determination of the case is much more uncertain when the delivery in dispute is not of recent date, but has occurred some time previously, since the traces left by any actual delivery are very materially modified by the age, bodily condition, and state of health of the party in question, as well as the age and relative development of the fœtus born in each individual case. But even in such cases the consideration of the totality of these traces will in most cases confirm the decision, though some of them may seem doubtful when separately considered. These persistent signs are as follow: 1. *Absence of the hymen.* I acknowledge that an abortion at the very earliest period of pregnancy may pass through the hymen without destroying it, but I must declare that those well-known cases which a few practitioners think they have observed of the passage of a fœtus quite or nearly mature through the hymen, be it ever so yielding, without destroying it, are founded in a mistake, which is much more easily made in regard to this organ than is generally believed. The existence of the hymen will always be a proof that there has been no birth of a child in the later months of pregnancy (certainly not from the fifth or sixth onwards!), whilst its absence proves nothing at all in regard to delivery at least. 2. *Destruction of the fourchette* is also in itself an important sign. The frenulum may also remain uninjured by an abortion; but by an ordinary delivery it is always destroyed, and like the hymen it is never restored. To assume that the fourchette might have been destroyed by an injury, such as a fall upon a pointed stone, &c., without there having been any delivery in the case, is a piece of the most unfounded scepticism; if ever such a wonderful case should occur, besides the absence of all other signs of delivery, there would also indubitably be cicatrices

and other results of the injury to be found in the inferior commissure and its neighbourhood. 3. *A dilated vagina free from rugæ* is also a valuable sign, though the dilatation of the canal proves nothing, since like every other canal it is easily dilated, and becomes very considerably so, merely by long-continued, though fruitless, carnal intercourse; the rugæ in its walls are, however, not usually restored when once they have been effaced by an ordinary delivery: abortions, however, and youth and firmness of the maternal body, may lessen the probative value of this sign. 4. *The dark colour of the areola round the nipples,* which is already developed during (the first) pregnancy (§ 27, p. 353 Vol. III.) never entirely disappears, whilst other discolorations of the skin—such as liver-spots, the dark central line of the abdomen, &c., may certainly vanish. For this reason the dark colour of the areolæ is always an important sign, and if it, as I must assert, is never absent during life after only one solitary confinement, and therefore certainly is just as unable as the other signs following to prove a certain delivery subsequent to previous ones, then if the colour of the areolæ be not dirty brownish-red, but the light rosy-red of the virgin, it is a positive proof that the delivery suspected has never taken place. 5. Precisely the same may be said in regard to the freckle-like *cicatrices in the abdominal coverings* which are chiefly to be seen in the inguinal regions, and have been already referred to (§ 27, p. 354, Vol. III.), and which never completely disappear after (the first) delivery. They are often so few in number as to be easily counted; at others their rows cover the whole of the lower part of the abdomen, and they are remarkably visible even upon recent bodies. Many years ago, I made very numerous investigations in regard to this symptom on the syphilitic females of our Charity Hospital, and I can testify that I have never once been wrong in deducing the fact of a delivery from the occurrence of even a few of these cicatrices, and the reverse when they were entirely absent, considering, of course, that these dissolute public whores had not the slightest interest in concealing the truth. I have also found this confirmed in my medico-legal practice. The objection to this symptom is, that the rupture of the *rete Malpighii,* which is the cause of these cicatrices, is produced by any great distention of the abdominal coverings such as may occur from other tumours of the belly, such as hydrovarium, extensive ascites, &c. But the larger proportion of females who are the subjects of medico-legal examination on account of disputed delivery are young women, who are as

such not generally subject to these and similar diseases; and even in the case of elderly females, we must never forget that ovarian dropsies, extensive tumour of the spleen or liver, or similar diseases which produce great distention of the abdomen, are seldom or never so completely cured as to permit of so great a relaxation of the abdominal coverings as is usually the case after the extrusion of a fœtus. From a practical point of view, therefore, this objection is of no value; and this continues to be one of the most excellent signs of delivery, being only absent in those cases in which abortion has taken place during the early months of a first pregnancy before the abdominal coverings have been distended to any considerable degree. 6. All that has been just said might be repeated in regard to *the folds and wrinkles of the abdominal coverings*, which are certainly only the result of their previous distention during pregnancy, and subsequent relaxation after delivery. But I must also add that I have frequently observed an abdomen smooth and free from wrinkles even when a birth has indubitably taken place, particularly after abortions and premature births, and even after deliveries at the full time in young, fat, and firm subjects; and *vice versâ*, it is well known that the disappearance of the subcutaneous fat in advanced age may be the cause of wrinkles on the abdomen just as well as on other parts of the body, and I have observed them to be very remarkable on the bodies of virgins aged sixty or seventy. This sign is, therefore, subordinate in value to the previous one. 7 and 8. The alteration during pregnancy of the transverse virgin form of the os uteri into *a circular shape* (§ 27, p. 352, Vol. III.) continues, subsequent to the retrogressive changes in the uterus after delivery, throughout the whole life; and I have had occasion to observe it most plainly on uteri removed from the bodies of very many old women who could not have given birth to a child for many years; and, on the other hand, I have always, and without exception, found this symptom present whenever any other sign distinctive of delivery, such as abdominal cicatrices, &c., were present. As, however, obstetricians assert that pathological conditions of the uterus may cause the os uteri to assume this circular form, and as I myself must confess that even a finger accustomed to such explorations might make a mistake during the life of the individual, therefore, as already remarked (*loc. cit.*) too decisive an estimate must not be placed upon this sign, though we must never omit its examination. We may, however, certainly conclude that a large body has forced its way through the os uteri, when we find one or more

lacerations (*indentations*) *of its lips*, which also never completely disappear after the first confinement. These, however, do not necessarily occur after abortions, and they are all the more likely to be absent the earlier the abortion took place.

Consequently, in accordance with these observational facts, it is by no means difficult to determine medico-legally, whether a woman *has ever been delivered* or no; but it is more difficult to ascertain *when she was probably delivered;* and this can only be done within the first few weeks of the actual delivery; while it is quite impossible to determine *how often she has been delivered.* Therefore, it is also, in particular, quite impossible to determine with any certainty whether a woman who confessedly and notoriously has given birth to a child some years previously, has also more recently — some months ago, or longer—been again delivered. Precisely such cases as these are, however, of frequent occurrence in practice, and the medical jurist can then only substantiate his reasons for giving a negative opinion.*

* I cannot omit giving as a warning, a short account of the following horrible case, which, in the year 1810, gave occasion to a superarbitrium of the Royal Scientific Commission (*vide* Hitzig's Zeitschrift für d. Crim.-Rechtspflege X. s. 233, &c.). Louisa S. was condemned to eight years' penal servitude for pleading guilty to the intentional murder of her newborn child. During her precognition for a robbery she had declared herself pregnant, and was handed over to a Maternity Hospital. After examination by a midwife, Dr. X. granted a certificate (!) that she was seven months' pregnant. A few months subsequently she secretly left the Maternity, and was afterwards recommitted to prison. In the course of her examination, upon recommittal, she declared that on the third night after leaving the Maternity she had been delivered of a child on a stair, that in despair she had stabbed it to the heart, and had buried it in a spot which she minutely described. The body could not be found there. There was no trace on the stair of any delivery having taken place there. Dr. X. and the midwife also judicially deposed, that from the condition of her genitals she must have been delivered several months previously. Her alleged seducer also deposed that he had impregnated her *three times*, and that on the night of the alleged infanticide she had told him that her confinement was close at hand, and that she had violent pains in her abdomen. At her first judicial examination she fell into a deep swoon, and in accents of despair called out, "I must get back my poor child," &c. She was condemned to eight years' penal servitude. After having completed two years and nine months of this punishment, she came forward with the declaration that she was perfectly innocent, inasmuch as she had *never* given birth to a child at all. When Dr. X. was examined as to his opinion, he declared "that he had probably never examined the accused at that time, and that he had only reported in

§ 38. Intentional Delivery; Abortion.

Statutory Regulations.

Penal Code, § 181. *Any pregnant woman who, by the employment of external or internal means, intentionally causes her fœtus to abort, or kills it while within her womb, is to be punished by penal servitude of from five, to twenty years. Whosoever shall employ or administer such means, with consent of the pregnant woman, shall be liable to the same punishment.*

§ 182. *Whosoever shall, without the consent of the pregnant woman, intentionally kill her fœtus, or cause her to abort, is to be punished with penal servitude for from five to twenty years. Should the life of the pregnant woman be sacrificed by this procedure, the punishment is then to be penal servitude for life.*

Among the many cases I have had officially to investigate on account of an accusation of *provocatio abortus*, I have seldom seen one where the circumstantial evidence made the guilt of the accused more clear, or where the judgment given was so peculiar as in the case related in § 76 (p. 6, Vol. III.), in which the seducer, a physician, had employed, *lege artis*, two methods of producing artificial abortion, and with the desired result. In that case, the ground for the acquittal was to be found in the absence of any actual object which could prove that the ovum expelled was a "child," and not perhaps only a "mole," a doubt which may be made use by defenders on other occa-

accordance with the statements of the midwife" (!!). The midwife was dead. The district physician M. and Professor B. examined the woman now, and certified "that this woman has never been delivered of a child." The opinion of the Superior Medical Board referred to was now requested. On examining the accused they found "Fourchette entire, narrow, elastic, and rugose vagina, the os uteri high up, with a virgin transverse fissure; abdomen and breasts without a trace of those linear cicatrices or streaks which are found, almost without exception, after every complete delivery;" and their opinion was, "that it was in the highest degree probable, and might almost be considered certain that S. had *never* given birth to a child of any size, such as we find in the second half of pregnancy," and declared this case to be more capable of a decided opinion than most of these cases (in regard to this the expression *almost certain* is remarkable). The accused was therefore only *ab instantia*, and not fully acquitted. Yet, from the inconsiderate statements of unconscientious and unscientific medical men, she had been for almost three years confined in jail!!

sions; because, if the medical jurist has not seen the ovum alleged to have been expelled—and he is seldom if ever so fortunate—he can never say with certainty, or even probability, whether it has been a healthy fœtus, a morbidly degenerated ovum, or some other pathological product which has been thrown off. In such cases, the physician and the Judge have before them a mother without a fœtus, and still more frequently, they have the reverse, a fœtus without a mother! Aborted fœtuses are continually brought before us, which have been found in cesspools, privies, &c. In general there is no doubt as to their normal human form, because the normal form is the rule; but the source of the fœtus is generally unknown, and remains so, and to the question usually put by the Judge, Whether it can be ascertained *from the condition of the fœtus*, that it has been intentionally expelled or no? a negative answer has constantly had to be given, since not a single case has come before us, in which injuries on the body, or particularly on the head of the fœtus might have raised doubts as to this, though indeed such injuries are almost never found even when the abortion has been mechanically produced. The subject of disputed abortion also presents other difficulties from other points of view. It is also indubitable, and is also generally known, that certain medicaments acting in a variety of physiological ways may separate the fœtus from the mother, and cause it to be expelled. I consider it quite improper to enumerate these medicaments, and point out which of them are the most effectual, as is usually done in works on forensic medicine, since the work may fall into other than merely professional hands, and they, moreover, are and must be completely instructed in these matters from their knowledge of materia medica and obstetrics. In like manner also every physician knows how uncertain all these so-called *abortiva* are in their action, and that there is *not one single internal medicament*, of which it can be consistently with experience asserted, that even where an abortion has followed its use, it must have produced this abortion, and that cause and effect are in such a case in direct and necessary connection. In large towns, such as Berlin, which have a large population of the lowest classes of both sexes, numerous attempts at abortion are daily made, as every one knows full well, by women during the first few months of their pregnancy, which are precisely those best suited for the success of such attempts, and yet for the most part they are without result.*

* Fortunately, however, I cannot say of Berlin what Tardieu says of

The new Penal Code, however, facilitates in so far the determination of the deed, that definite categories are no longer laid down, but each case has to be decided on its own merits, and there is also no mention made of any means which must necessarily produce abortion. In the penal codes of Bavaria, Oldenburg, Würtemberg, Hannover, and Baden, there is nothing spoken of except means "which can produce the expulsion of a fœtus," whilst the Prussian Penal Code, and that of all the other German States, except those mentioned, keep only in view the fact of the fœtus having been expelled, from which it, however, follows logically, that the necessary connection between the cause and effect does not require to be proved. Wherefore, it indubitably follows in analogy with the regulations as to poisons in § 197,* that since the appearance of the new Penal Code, we are asked in all cases that may happen to occur, whether the means employed have been such as were *fitted* to cause a pregnant woman to abort? In regard to this, in most cases we are enabled to give a perfectly decided affirmative or negative answer. The latter is very frequently the case, for it is incredible to what singular and absurd substances and mixtures the prejudice, credulity, imperfect knowledge, and ignorance of the lower classes, have given the repute of active abortives. A girl, far-advanced in pregnancy, had long endeavoured to procure—half-an-ounce of spirit of rosemary, which with a free and unembarrassed conscience she might at once have procured from any apothecary; having at length obtained it, she drank it, of course without any result, and then drowned herself, still undelivered. Green soap, which, from its relative frequent occurrence, seems to enjoy a special repute, comes before us in the most extraordinary forms, for instance as a bolus, or dissolved in liquorice juice, or in warm beer. In two cases the Thuja orientalis was employed, unquestionably in a mistake for Savine, &c., &c. All these means must of course be declared to be *not suited* to produce the end desired. Even where means have been employed, which in themselves are certainly suited for the purpose, attention must nevertheless, be paid to the dose employed, the form of administra-

Paris, that in it "*le crime d'avortement constitue une industrie libre autant que coupable. C'est là une vérité tellement reconnue, que l'on désigne publiquement des maisons où les femmes sont assurées de trouver la funeste complicité qu'elles réclament, et dont la notoriété est repandue jusqu'à l'étranger !*" Annales d'Hygiène, publ. II. v. 1856, p. 125.

* "Whoever intentionally administers to another poison, or any other substance which is fitted to injure the health, is to be punished," &c., &c.

tion, and the time subsequent to the use of the drug within which the abortion has followed. As in every case it is the dose consistent with experience which constitutes the active medicament, and as one grain of Camomile cannot be regarded in this sense as Camomile at all, so neither can one grain of Savine or one-eighth of a grain of Ergot be reckoned as abortives. That the form in which the drug is administered may be also of considerable importance, is very well shown by a very interesting case which was sent for my decision by a foreign jury court. The accused had (as is certainly usual) repeatedly drank a decoction of Savine. The box with the rest of the herb was found upon the table of the *corpus delicti*, and was sent to me. It was also proved, that the herb at the time of its use was already in the same condition in which I found it, that is, quite dried up, almost completely fallen to powder, utterly devoid of smell even on being rubbed, and therefore completely deprived of its active principle. I had of course to declare that Savine such as this was quite unfitted to produce abortion. So also we must consider the time within which the abortion has followed the employment of the means. For even though the fœtus may be retained within the uterus for some time after its death, yet we cannot err in declaring, that an abortion which has happened many weeks or months *post hoc*, has not occurred *propter hoc*. But there is also this uncertainty in regard to the medico-legal opinion of the efficacy of internal abortives, that it cannot be denied, that according to all experience, even the most powerful and efficacious of them all generally fail of their end, and even after their administration the woman remains pregnant as before. Forensic medicine has nothing to do with the fact that the Judge may, nevertheless, turn to good account from his point of view, the declaration that the medicament is "suitable" for the purpose of producing abortion.

§ 39. Continuation.

The external means and methods employed for the production of abortion must, in fact, be estimated by the physician *in foro*, somewhat similarly as the internal, with the exception of the various scientific methods of producing premature labour artificially, which are taught in obstetrical handbooks, and are, indeed, perfectly certain in their action, but which are not popularly known, and which can neither be employed by the pregnant woman herself, nor by

any non-medical accomplice, either with or without her knowledge or desire (Penal Code). Amongst the other external means and methods, we must reckon venesection, a great variety of liniments (of which I have seen the most absurd examples), and particularly all acts of violence committed on the body of the pregnant woman, from tight-lacing, to kicks on the abdomen, &c., blows, violence inflicted on the back and sacral region, &c. It cannot be disputed that all these influences may bring a pregnancy to a premature conclusion, consequently that they are "suited" to produce abortion; but it is still more certain that the greatest violence neither is nor must by any means always be followed by this result, and that the pregnant woman is more often injured by them than her fœtus. A woman, who, together with her seducer, a journeyman tailor, had agreed to attempt to produce abortion, permitted herself to be trampled on by him without any result, and the natural idea "of cutting the child's thread of life," which the man attempted to carry out by introducing his thick and large tailor's scissors into the vagina, was also followed by no other result than merely to produce a wound in the vagina! I may here mention that in accordance with several cases which have come before me, the question as to the possibility of producing abortion by inflicting violence on a pregnant woman may also occur judicially under perfectly different circumstances from those referred to. I mean in those frequent instances in which women lay an accusation against a third party, that they have aborted; in consequence of violence or other injuries inflicted by him, such as blows on the back, being thrown downstairs, &c., these cases come under the head of severe or important bodily injuries (*Vide* § 43, &c., and Case CV.). In these cases the principles already laid down are also applicable, but we must remember in regard to them, as also in regard to accusations of *provocatio abortus*, which are also brought forward without any foundation, that appearances on the body, which are alleged to be the results of violence, such as wounds, ecchymoses, scratches and the like, may be artificially and intentionally produced, in order to make the accusation appear credible.

There are, therefore, various external and internal means known to, and employed by, non-medical persons, which, when used upon a pregnant woman, may bring her pregnancy to a violent and premature conclusion. But though their employment be actually proved, it cannot from that be concluded the abortus in any given case has

been the necessary result of the cause referred to. This, however, is a needless stretch of scepticism, since experience teaches us that abortion not only happens unintentionally and without any interference to that end, either by the pregnant woman or a third party, but even in happy marriages, in spite of the greatest care to prevent it, and also that these involuntary abortions are of much more frequent occurrence than those which are voluntary and punishable. General diseases in the pregnant woman, great irritability, weakness, a predisposition to abortion, which makes many marriages childless, depressing emotions of every kind, abuse of spirituous liquors, excessive sexual intercourse, hæmorrhages, hyperæmia of the uterus, diseases of the fœtus and placenta, &c., are all well-known and frequent causes of unintentional premature delivery. But we must not forget in any doubtful judicial case that most of these causes of morbid involuntary abortion are *incapable of medico-legal proof*, and a fresh difficulty thus is presented in deciding any given case.

The chief and preliminary inquiry is attended with no less, and often with the greatest difficulty, and with its consideration we must always commence, because, if a negative answer be given to it the whole case falls to nothing. I refer to the question whether an abortion has actually taken place or no? The difficulties in the way of answering this question are much more considerable than those in regard to a delivery in the later months of pregnancy (§§ 36, 37), and they are all the more so that a woman who has secretly aborted can much more easily conceal her delivery for a long time, than one who is delivered at a later period of pregnancy, because her pregnant condition previous to the abortion is more easily concealed, consequently the investigation by the forensic physician in general must be, and is much longer in being carried out, and happens therefore at a time in which the transitory signs of delivery (§ 36) have long since disappeared, whilst the persistent signs (§ 37) are, as already said, much more faintly impressed on the body after an abortion, indeed, some of them, such as indentations in the os uteri, and laceration of the fourchette, may be entirely absent. And if the party concerned has been previously delivered, and if the examination has been carried out weeks or months after the alleged abortion so that not one of the transitory signs can be any longer observed—a most frequent occurrence *in foro*—then the forensic physician is no longer in a position to decide the case with certainty, or even sometimes with probability. The positive determination of a

disputed intentional abortion is therefore one of the most difficult tasks of the forensic practitioner; the negative determination of such cases is less so, that is, however, only in regard to persons who have never been pregnant, and who only (after the infliction of violence, &c.), simulate an abortion, or who have been falsely charged with having aborted.

§ 40. Of the Substitution of Children.

Statutory Regulations. (*Vide* p. 381).

This deceit, which the Penal Code threatens with a degrading imprisonment for many years, is but of rare occurrence in ordinary life; not, as is usually said, because the interests at stake are not of so much importance as where an heir to a property or to the throne is substituted, since his own interests seem to each individual quite as important as these, but because the deceit is very difficult to set a-going and to carry out, and because it requires the assistance of cognizants and accomplices, unless, indeed, the child be stolen, as in a case in Klein's Annals of the Law. In this case, a peasant woman wished to force a marriage; she made the man drunk, induced him to have intercourse with her, feigned pregnancy, and finally set fire to a house in which a neighbour had been delivered of twins, stole one of these children, and produced it as a child of which she had been delivered! In other cases the extortion of money from the alleged seducer and father, more rarely, the affecting wish of a childless wife to gladden her spouse by making him a father (this was the cause of the last case of the kind which came before me), finally, in most cases, the desire to obtain an inheritance of some kind or other is the moving cause of a fraud of this nature. The writers on this subject have been also guilty of introducing in regard to it, ideas foreign to forensic medicine, when they continually speak of the "genuineness," of the "legitimacy," and of the "power to inherit" of the child,—ideas which belong to the statute-book and the science of law, and with which forensic medicine has nothing to do. The latter has only to consider the criteria according to which it may be actually determined in any given disputed case, whether *this woman has given birth to this child,* as she asserts she has, whilst the opposing party declares she has not, and that the child is suppositious. More rarely, the case of substitution is, as

it were, relative; that is, the fact disputed is not whether the woman has been delivered or not of the child in question, as, whether this child has been begotten by this man, who asserts that the child is supposititious, as far as he is concerned. Both cases coincide in regard to the medico-legal examination. In the first place, it is necessary to determine whether the alleged mother has ever given birth to a child at all. The signs of delivery (§§ 36, 37) will decide this point. If it should be discovered that she has never given birth to any child, then the fraud is at once proved. The case is more difficult where she has produced a child, but perhaps one of an undesired sex, such as a daughter where a male descendant was required; or, when, instead of a living child, which alone could serve her purpose, a dead one has been born. In order to ascertain the truth in these cases, where possible, the age of the child said to have been born must be ascertained and compared with the alleged period of delivery. A fraud might thus be possibly easily detected, such as, for instance, when a child alleged to be three days old, is exhibited with a completely formed navel. Has, however, the alleged mother, who has actually produced, had the cunning to substitute a child of the same age with her own,—then the medical jurist will in general have to declare the impossibility of his being able to give a decisive opinion. Because the resemblance of the child to its putative father, which we are advised to pay attention to, is a most uncertain mode of proof, particularly in the case of newborn or very young children. In such children, especially in newborn ones, the resemblance in features to parents or relatives is, in most cases, not yet developed; moreover, the power of discovering a likeness is something quite individual, and, finally, it is well known that it is no law of nature that children must resemble their father or their mother, and that many exceptions occur to this. Yet it is but a few years since a singular case came before me officially, in which this criterion was of itself sufficient, it was a case of what I have termed relative substitution, in the which the resemblance was based upon the difference of race. A white woman had a liaison with a negro of this city, and had a son by him aged four years, who exhibited all the peculiarities of a true mulatto. The woman, however, produced a second boy, the paternity of which the negro denied, as he suspected the woman of having had intercourse with a (white) labourer. The second child, eleven months old at the time of my examination, was, however, also a completely developed mulatto, and could not, therefore, have

been begotten by a white man out of its white mother! In this case, therefore, the absence of fraud was indubitable. It is somewhat remarkable, that a precisely similar case had occurred in Berlin in the year 1790. It gave occasion to a report by the superior Medical College, which gave itself the trouble of proving, by many quotations, "that a white child born by a white mother could not have been begotten by a black man." * Remert goes still further than the mere difference of race, for he points out that certain congenital family peculiarities descend for generations; and of this he gives illustrations, such as a crooked little finger on each hand, red hair, stuttering, absense of the same finger-joints, and blindness; and modern physiological experience might very much enlarge this list. Remer asserts, that when such peculiarities are observed upon a child said to be supposititious, that then its "genuineness" is certain; but, however, where these are absent, the reverse is not to be concluded with certainty, but suspicion is justified. This assertion is tenable enough when the malformation or peculiarity in question is remarkable and indubitable, and is also of rare occurrence, but it must not be made to include "red hair," or "stuttering," and the like, which from their frequency might occur by chance, nor even a mole, &c., which might lead to mistakes; just because, however, such cases are of extremely rare occurrence as judicial ones, so therefore this criterion, taken from the resemblance of the child, is almost worthless for medico-legal practice. Just because, on the whole, frauds perpetrated by the substitution of children are in a medico-legal point of view always difficult, and under many circumstances impossible to detect, while their results are of the highest importance to families, morality, ay, even to public weal; therefore families and nations have, from olden times, prescribed by statute certain precautions for the prevention of these frauds. In ancient dynasties, as in the Bourbons, the birth of a new member and possible heir to a throne is attended by solemn statutory forms, which have for their object and intention that the whole act of delivery should proceed before trustworthy witnesses, the highest officials of the crown and state, &c., which is certainly the sole method of attaining perfect certainty. In all statute-books similar regulations are contained. These commence to take action in the respective cases even during preg-

* Pyl, Aufsätze u. Beob. VII. s. 262.
† Metzger's System, 5 Aufl. s. 367, *note*.

nancy, which is submitted to a continuous control, &c.,—but forensic medicine does not require to enter further upon this subject.

It has also been imagined that in a case of twins the second-born child might be preferred, and, as it were, substituted for the first-born,* and endeavours have been made to ascertain how a substitution of this character could be found out! I am of opinion, that all such medico-legal subtilties come under the same category with the similar obsolete question, whether children begotten during the full moon are more viable than those conceived during the new moon? For the answer to which I may refer to Paulus Zacchias.

§ 41. Injuries to the Mother and Child during Delivery.

The question whether injuries may occur to the mother or child during, and to the latter immediately after, delivery, without any blame being attachable to the mother, the accoucheur or any other person, is one of frequent occurrence in medico-legal practice, and is closely connected with the subject of delivery. I have already given full details of the injuries and forms of death which may happen to the child, accompanied with a copious collection of illustrative cases in §§ 108-121 (pp. 109-171, Vol. III.), and to this I now beg to refer. Among the injuries which may happen to the mother during the act of delivery, *rupture of the uterus* is one which frequently comes in question, because it may indubitably be caused by coarse obstetrical procedure, by the awkward employment of instruments in attempts at producing abortion,† violent extraction of the placenta, attempts at turning with a firmly contracted uterus, &c., but may equally indubitably occur perfectly spontaneously, and in the hands of the most cautious and expert obstetrician. It may be caused by anormal attenuation of the uterine walls, which in one case that came before me were only three or four lines in thickness,‡ especially when this attenuation, or when fatty degeneration of the walls coincide with contraction of the pelvis, or with a transverse position of the fœtus; or by any other obstacle to delivery in the

* *Vide*, among others, Müller, Entwurf der gerichtl. Arzneiwissenschaft nach juristichen (*sic!*), u. medicinischen Grundsätzen. Frankf. 1796, I. s. 366.

† Several such cases are to be found in the Annales d'Hygiène, publ. 1858, X. p. 156, &c.

‡ *Vide* Case CCCXXIX. p. 326, Vol. II.

soft or the hard parts when the pains are violent, such as spasmodic stricture, or cicatrices, or morbid alterations of the os uteri, which prevent its normal dilatation, &c. The extreme rarity of such spontaneous ruptures of the uterus, which, for example, in the large Maternity Hospital at Paris only occurred eleven times out of fifty-nine thousand eight hundred and fifty-nine cases, during the twenty years from 1839 to 1858, must always cause special care to be exercised in giving an opinion in any case in which, from circumstances, the cause of the rupture is doubtful. This opinion must further be guided by the period of pregnancy at which the rupture has occurred —as it would be something more than suspicious if the rupture should have occurred long before the normal end of the pregnancy— as well as by the state of health of the deceased, the nature of the labour, the pathologico-anatomical appearances and individual circumstances of each particular case. Further, the following accidents may also occur quite spontaneously and unavoidably:—*rupture of a varix*, which may be followed by a rapidly fatal hæmorrhage, a similar *hæmorrhage* from the ruptured uterine vessels; *laceration of the perineum*, with subsequent incontinence of the fæces; *rupture of the vagina*, where it has been congenitally tight, or has been rendered so by cicatrices; violent *inversion of the uterus*, ay, even *laceration of the pelvic ligaments*.*

The decision in any case in which blame is supposed to be attachable, must, of course, be given in accordance with the particular circumstances of the case, and these, of course, are only to be ascertained by an accurate history of the labour, whenever and in so far as it is to be obtained, which is by no means always the case; and by the personal examination by the forensic physician of the party alleged to be injured, if still alive; or by the medico-legal dissection of her body. The general principles upon which the decision is to be based are precisely the same as those upon which we must proceed in regard to any other decision as to any other accusation of malapraxis against a medical man, and these have been already fully detailed in § 70, p. 308, Vol. II.

* *Vide*, for a thorough medico-legal explanation of these cases, Hohle, *op. cit.* pp. 774-791, 808.

§ 42. Illustrative Cases.

Case CI.—Has the Woman, Z., been delivered five or six months ago?

She was accused (under the former statute) of having been secretly delivered in January or February, and when the investigation was commenced, in June, she denied having been delivered for a whole year. At the examination I found her to be a woman aged forty-seven, who, during five-and-twenty years of married life, had given birth to *nineteen* children, all mature, and besides these she had also nursed several foster children. And now I was required to determine the birth of a twentieth child, alleged to have been born half-a-year previously! The woman, Z., came before me, firmly denying all this, and asserting that she had given birth to her last-born child two years and four months previously, an assertion which, of course, could be of no assistance. Her breasts were flabby and withered, the areola very dark, the nipples looked as if they had been used in nursing. The abdominal coverings were extraordinarily withered and wrinkled, but exhibited but few cicatrices. The vagina was relaxed and dilated; there was no discharge, no lochia; the uterus was elevated, its os was firm, hard, circular, and permitted the passage of the point of the index-finger, having at its right side two indentations. The fourchette was completely absent. Accordingly, we could only determine that the woman Z. had repeatedly given birth to children, and that from the absence of turgescence or milk in the breasts, of the lochia, whether sanguinolent or mucous, and of any considerable dilatation of the os uteri, it was certain that she had not been delivered for some weeks. Whether, however, she had not been delivered five or six months ago? could not be determined, even with probability, from the appearances observed and in the circumstances of the case.

Case CII.—How old was the Fœtus born three weeks ago?

In the case of the unmarried woman, L., the question in dispute was not so much the delivery itself, as the period at which the pregnancy had been interrupted. This person had also previously been delivered. On the twenty-third of September I still found in

the breasts a considerable quantity of tolerably rich and very white milk, which of itself, as I explained, was very much against the probability of L.'s assertion that she had only been three or four months pregnant. "The abdomen was copiously beset with those folds and streaks which are the result of the birth of a mature child; but this, however, is of no importance in this inquiry, since it is certain that L. has, at any rate, already produced one child at the full time. There is still a slight trace of the lochia present, but this proves nothing in regard to the age of the child just born. On the other hand, the os uteri is still, three weeks after the confinement, dilated to the size of a fourpenny-piece, and there are a few lacerations on it. Such an amount of dilatation, however, does not bespeak the delivery of any very small (young) fœtus, but rather of one of some considerable size, that is, age." In accordance with all these appearances, I declared that "the fœtus, of which L. had been delivered three or four weeks ago, was most probably older than four months."

Case CIII.—Disputed Abortion.

C., a stout woman of six-and-twenty, had already been delivered, in April 1854, of an eight-months' child, which she had nursed a whole year. Since the sixth or sixteenth of August, 1855, she was said to have been again pregnant, and to have made use of savine and spirits of rosemary as abortives. On the twenty-fourth of November, that is, in the fourth month of the disputed pregnancy, I examined the woman, C., in prison, and found as follows:—the breasts were firm, with a dark areola, largely developed nipples, and no trace of milk. The abdomen in this stout woman was somewhat protuberant, little distended, and had distinct deep wrinkles over the pubis. The menses were said to have twice ceased to recur, which, however, was alleged to have been "sometimes" the case with her previously. The vaginal mucous membrane was not reddened, the hymen and fourchette were destroyed, there was a slight fluor albus. The entrance to the vagina was tolerably wide. The uterus was somewhat retroverted, therefore the vaginal portion was somewhat tilted up, but the finger could be easily passed round it. The os uteri was of a distinctly circular form without any indentations. She alleged that her health was perfectly good. She declared that she had not made any use of savine, and spirit of rosemary only in so far

that she had plucked some of the fresh herb out of a flower-pot, upon which she had poured some corn brandy, and of this she had drunk a wine-glassful in the evening. The questions given to me, I answered thus: 1. It cannot with certainty be determined whether this (multiparous) person is still in the fourth month of pregnancy, that this, however, is not probable; 2. That she has been formerly delivered; 3. That she has not been delivered about fourteen days ago (shortly before her imprisonment); 4. That savine under certain circumstances may be, but that spirits of rosemary cannot be regarded "as a medicament fitted to produce abortion." The woman C. had not been pregnant at this time, for she came before me for examination on the nineteenth of March, 1856, with this query, whether she was *now* pregnant, and in what month, or whether she had shortly before aborted or been delivered? I found precisely similar appearances to those just detailed, only now her shift was somewhat stained with blood, alleged to be from her menses, which were said to have been recently present. Her abdomen was not more distended than formerly, and the auscultation revealed no signs of pregnancy. Accordingly, I must declare that the woman C. was now also probably not pregnant, but it was certain that she was not six or eight months gone with child, and that she had not shortly before aborted or been delivered.

Case CIV.—Disputed Abortus after Ill-treatment.

At the time of the trial, I had to examine a large, robust woman, twenty-eight years of age, who had been married for five months, who had accused the prisoner at the bar, her sister-in-law, of having, four months ago, thrown her down and abused her with blows of her fists, and by kneeling upon her belly when she was (for the first time) three months pregnant. She deposed that on the day after the assault she had rigors, violent pains in the sacrum and loins; that for one day she had lost much blood, afterwards less had come away; she also stated that she had observed "skins" among the blood coagula. No medical man was consulted. I found a faint yellowish-brown areola round the nipples, which were not developed. There was no milk, no streaks or wrinkles upon the abdomen; no discharge; the hymen was destroyed, but the fourchette was still present, the vaginal portion of the uterus was low down, the os uteri was somewhat circular, without any laceration. Considering the

case as a whole, the statements on oath of the injured party to the court, which, as we see, bore internal evidence of truth, and the results of my own examination, I had to declare that it was probable that an abortion had taken place.

CASE CV.—BLOWS WITH A BESOM-SHANK.—ABORTION.

A fragile, feeble woman, aged twenty-seven, who had been four times happily delivered, and had never aborted, and who superintended her household alone, was abused by blows on the arm, hand, and back, while she thought herself again two months pregnant. Just two hours after this ill-treatment, a metrorrhagia set in, and a midwife had certified that an abortion had actually resulted—but when? could not be subsequently ascertained. The causal connection between the abortion and the violent treatment could not, therefore, be denied, since there was neither an individual disposition to abortion, nor was there any other cause to which it could be attributed; the hæmorrhage had almost immediately succeeded the beating, and the blows of a stick upon the back, combined with the emotional excitement necessarily concurrent, must, of course, be regarded as a very possible cause of an abortion in any woman two months pregnant. It was ascertained that the hæmorrhage had lasted for about six weeks, and the woman was alleged to have been much weakened by it, which all medical experience rendered credible. At the time when I examined her she was perfectly restored. Besides the principles already referred to, we had to declare that "a deprivation of the power of procreation could not be caused by this abortion" (§ 193, Penal Code), but that it had occasioned "a lengthened period of incapacity for work," an incapacity for exerting herself with her usual amount of activity, and that, accordingly, the injury must be declared to be "important" (§ 192 Penal Code).

CASE CVI.—HAVE ANY ATTEMPTS BEEN MADE TO PRODUCE ABORTION MECHANICALLY? AND HAS THE WOMAN ST. BEEN SEVERAL TIMES DELIVERED OR NO?

Both of these queries had to remain unsolved. The woman St. was delivered on the 27th of April, 1841, of a living child, and was said "to have employed mechanical means to procure the expulsion of this child." Then it was questionable whether she had been

pregnant previous to this pregnancy, or subsequent to this confinement? The case, the connection of which is unknown to me, was certainly not an easy one. My examination of the woman took place on the 22nd of December, 1842, twenty months after the birth in April. I reported as the result of my examination, that "'the woman St. is twenty-five years of age, a very robust person, and seemingly in perfect health, who says that except during her pregnancy, which ended on the 27th of April, 1841, that is to say, *before* this period, as well as *after* it, her menses have always been perfectly regular, and that four months ago she suffered from an inflammation of the lungs. There are no corporeal signs by which the truth of this statement as to her menses could be ascertained, and I must therefore leave this undetermined. The abdominal coverings of St. are relaxed and full of folds, as is always the case in women after a confinement. It is not, however, to be denied that a relaxation so considerable as is present in this case, does not usually occur in a woman so robust and firm as she is, as the result of merely *one single confinement.* Yet this phenomenon does not permit us to conclude even with probability, that St. has had *only one* or *several* confinements, since it is one which varies too much with each individual, and depends in particular upon the greater or less amount of care taken of her abdomen by the woman during her pregnancy and after her confinement, by long-continued inunction with strengthening and aromatic substances, &c., which we cannot enter upon here. Besides this wrinkled condition, the abdomen of St. also displayed those cicatrix-like streaks which are also found to be persistent after but one confinement, and from these, therefore, no conclusions can be drawn in regard to the question, *ad* 2. No traces of external violence were found upon the body of the woman examined. In estimating these negative appearances (and in answer to the question *ad* 1), I must, however, remark, that it may be certainly concluded from them, that no solutions of continuity (wounds) could formerly have existed on the body of the woman examined, particularly on the lower part of her abdomen or back, because otherwise their cicatrices must have been still discoverable. Whether, however, there may not have perhaps been some time mere *ecchymoses,* the results of blows of the fist, kicks, ligatures, &c., the result, in short, of 'mechanical attempts to procure the expulsion of a child,' upon the body of St., must remain undetermined, from the present negative condition of the appearances found, since even ecchymoses of con-

siderable size completely disappear after a time by the absorption of the effused blood. The areola round the nipples was of the dirty brownish-red colour usual after even a single confinement; the breasts were firm and compact. In regard to the condition of the genital organs, there is, in the first place, nothing unusual to be observed about the vagina, except a little fluor albus, which is of no consequence for the present inquiry; which is also the case in regard to a few conical condylomata, found in the region of the vagina and the anus, and a few hemorrhoidal tumours in the neighbourhood of the latter. The vaginal portion of the uterus is tolerably elevated, the *os uteri externum* harder than usual at this time of life, it is also circular in shape, a form which is found after one just as well as after several deliveries. I have also found one laceration on its posterior lip, which is a further proof that St. must have been delivered, and also with *some degree of probability* intimates that she has not given birth to more at least than one child at the full time, because several lacerations are usually found after repeated deliveries. The number of lacerations, however, has no necessary or definite relation to the number of confinements, and in particular after the expulsion of immature fœtuses, frequently no lacerations are observed at all, because in such cases the *os uteri* is not usually so widely and forcibly dilated. Finally, the vagina of St. is not immoderately dilated, and there is no laceration of her perinæum, phenomena which are both of no consequence in relation to the present inquiry. Accordingly I must answer the questions put to me as follows:—*ad* 1, that it can no longer be ascertained whether this woman has suffered from the employment of mechanical means to procure the expulsion of a child; *ad* 2, that it is at least to be assumed with some degree of probability that the woman, St., has only been delivered of one child at the full time, but it cannot be ascertained whether she has been pregnant previous to or since that pregnancy."

Cases CVII. to CIX.—Three Accusations against Physicians of having produced Abortion Criminally.

I regret having to sully the pages of this work with three such horrible cases; their instructive character, however, both requires and justifies their insertion.

CVII. This case has been already cursorily referred to (at p. 391, Vol. III). The maid-servant E., aged twenty-one, whose menses had

ceased for two months, had felt herself unwell for several weeks before Whitsuntide 18**, without suspecting that this could be the result of her being impregnated by her master, a physician and practical obstetrician, Dr. X. After she discovered this to be the case, her master, according to her statement, repeatedly "passed a long instrument" into her genitals, and also several times "pushed small three-cornered pieces of sponge deep into them, which, after their removal, were always swollen up." On the second day of the Whitsuntide festival, she was seized with violent pains, and suddenly lost much blood along with "skin and husks" (shreds of skin). Five months subsequently she was brought to me for the first time for examination! "The areola round the nipples," I reported, "is darker-coloured than is usually the case during virginity and previous to the first impregnation. No milk can be expressed from the breasts. The left breast exhibits the cicatrices of sores, which are wholly irrevelant to the question in hand, since the suppuration in the breast did not occur till three months after the alleged occurrence of the abortion. Neither cicatrices nor stains are to be seen on the abdomen of this firm and robust woman. The genitals are deflowered. The vaginal portion of the uterus is tolerably elevated, and neither exhibits lacerations nor any other injuries. The os uteri is, however, not of the virgin transverse form and closed, but is of an elliptic shape, and can be entered by the point of the index finger. There is no discharge from the genitals, and the fourchette is not destroyed. The innate truth in the statement of the accused and its agreement with the appearances found, are in favour of the correctness of her accusation. What E. alleges to have been done is precisely what is done in obstetrics, whenever the preservation of the life of the pregnant woman requires that her pregnancy should be brought to a premature and enforced conclusion. This method of procedure is only known to experts, and can only be employed by them with any prospect of attaining the desired result, but when properly carried out it is certainly the only sure method of bringing on an abortion or a premature birth. Whether this method of producing abortion has been employed upon E. five months ago, is a matter not easily decided. After the lapse of so long a time, those signs which might have been expected to have been found shortly after an actual delivery, such as more or less milk in the breasts, more or less heat in the genitals, some discharge from them, and a considerable dilatation of the os uteri, have necessarily disappeared. Nevertheless the following remarkable

appearances were found on E.: a dark areola, which indicates the pre-existence of pregnancy, and the aperture of the os uteri, which was not transverse but round and not completely closed, an appearance which does not indicate mere defloration or sexual intercourse, however often repeated, but which permits us to conclude that a delivery must have occurred. Considering all these facts, I must give it as my opinion that the appearances on the body of E. are in favour of the fact of her having had an abortion." (I have already [p. 391, Vol. III.] related how and for what reason the accused has been acquitted!)

CVIII.—Some years ago a physician practising in Berlin, who was notoriously of bad repute, and has subsequently been outlawed, was accused of having given the Widow K. a prescription "for the purpose of expelling a fœtus." The documentary evidence was put before me along with this query, "Whether the drug, if employed according to the manner stated orally by K., was fitted to produce the intended effect, and whether its use was attended by any considerable danger to the health of K.?" After a careful and conscientious examination of the documentary evidence, I stated in my report, "experience teaches us that there is no drug in the Materia Medica which produces its effects with such certainty upon the life of the fœtus or upon the pregnant uterus; that its employment *must* of necessity, and under all circumstances, separate the fœtus from the pregnant mother, that is to say, cause an abortion. In accordance with this undoubted principle, which has been based upon experience, the drugs prescribed by Dr. Y. cannot be declared to be of such a character either in themselves or in their admixture. Nevertheless there are drugs which act in so irritating a manner upon the above-mentioned and neighbouring parts as to produce the hæmorrhage from the uterus, pains, &c., and which may thereby produce abortion, and often do so; and when such drugs have been actually employed it must at least be asserted of them that 'they are *fitted* to produce the effect intended.' And this is all the more true when these drugs have been administered in particularly large doses, and especially when a combination and union of similar medicaments in large doses has been employed. And this was precisely the case in regard to the mixture of drugs prescribed by Dr. Y. for the Widow K. According to the documentary evidence this consisted in a five-ounce infusion made from one ounce (imp.) of senna leaves, and of a five-ounce infusion of one ounce (imp.) of savine, to which ten ounces of water were to be added, one ounce

and a-half of syrup of saffron, and one ounce and a-half impure tartrate of potass and borax (*Tartarus boraxatus*), and of this mixture the Widow K. states that she was ordered to take one tablespoonful every two hours. The whole would amount to about twenty-six tablespoonfuls, and the woman, K., would have required three whole days to make use of it. In the first place, the doses of all the medicaments must be regarded as relatively large. An infusion of one ounce of senna leaves in five ounces of fluid must of itself prove strongly laxative, and that it had actually had that effect in the woman, K., is evident both from the statements of herself and R., although the Woman K. has not nearly taken the whole of the medicine. But strong purgatives act upon the pregnant uterus partly sympathetically and partly mechanically (by the strong straining), and prudent physicians are therefore careful not to prescribe such remedies for pregnant women, in order to avoid abortions, particularly during the first months of pregnancy, when abortions are comparatively easily caused, the very stage of pregnancy at which the Widow K. was at that time. Savine has a still more directly excitant action upon the uterus; for this reason it possesses a popular repute as an abortive agent, and no physician would prescribe it for any pregnant woman without some peculiar reason (which can but rarely happen). This medicament has also been prescribed by Dr. Y. in this case in an unusual dose (one ounce to five ounces of infusion). Further, the preparations of borax in general belong to the class of medicaments in question, though it cannot be denied that the one chosen in this case (*Tartarus boraxatus*) possesses less than the usual amount of this quality. It is, however, to say the least, very remarkable to find so large an amount (one ounce and a-half) of this substance added to a mixture such as that described. Finally, saffron has been regarded as a stimulating excitant of the circulation, consequently an agent in producing miscarriage, but the prescription in question contains only the very mildest preparation of this drug, namely, the syrup of saffon, which in itself would be perfectly harmless. In regard now to the actual effects of this mixture, all the symptoms related by K. in the documentary evidence, such as violent cutting pains in the abdomen, violent diarrhœa, weakness in the legs, and therefore incapacity for work for a few days, are all to be ascribed to the action of the senna, and no other results have ensued, chiefly because the medicine was laid aside, after which the results mentioned being unimportant, of course speedily ceased. Though the Widow K. was thus in no

actual danger, and though I will not bring forward the supposition that by a longer continuance of the mixture with increase of her purgation an inflammation of the bowels *might possibly* have arisen, yet it cannot be denied after what has been already said, that the use of the whole of the mixture *might* have been followed by the aforementioned expulsion of the fœtus, and that under *these* circumstances the general health of the woman, K., would have been threatened, since an abortion produced by violent means is very often a source of protracted and violent hæmorrhage, which exhausts the strength for a long time. Accordingly I answered the aforementioned query as follows: that the said mixture was *fitted* to produce the end desired, and that by its use the health of the Widow K. might *possibly* have been placed in considerable danger." The matter did not end here. The accused protested against my opinion, and alleged as an objection to it that the Widow K. was disposed to abort; he, however, requested that another medical man should report upon this matter. My deputy, whom I have never seen, either before or since, was now charged with the examination of the Widow K. He found, according to his report, which I possess, that she was forty-one years of age, a robust, corpulent, perfectly healthy person who had never suffered from any disturbances of the circulation, had never been bled, and had got easily and well over all her confinements. Not a trace of debility or great irritability was to be found in her. Her menstruation was always regular and painless. She had given birth to *twelve mature children*, and besides she had aborted thrice, the first time in the sixth month of her pregnancy the day after carrying a heavy chest; the second time was also mechanically brought about in the second month; the third time was caused by violent emotional excitement. After the last abortion she had, however, produced several other children at the full time. When locally examined, my deputy found that she had a moderate fluor albus, the genitals were normal, and the examination was not in the slightest degree painful. In accordance with all these circumstances, he reported very properly, "that the Widow K. had *not* a peculiar disposition to abort."[1]

CIX.—The third case was something like the first, as may be seen from the query put before me, "Can the expulsion of a fœtus be produced by the introduction of an iron wire, through a pewter syringe, into the genital organs during the fourth or subsequent months of pregnancy, whereby much blood was lost?" By which

it was also required to consider, "in how far an abortion was thus probably intended to be produced?" The physician accused was the supposed seducer, and was said to have introduced this instrument three times, and each time to have occasioned the woman to lose "some blood." This operation was, however, productive of no result either to the mother or the child, and did not prevent the birth of a mature and healthy child. The report, in the first place, detailed the causes of abortion, and then went on to say, "the artificial production of uterine pains may be caused by any violence acting through the genital organs upon the uterus, and therefore also by an iron wire, whether it be guided through a syringe or not; the sole condition necessary being that the uterus itself be struck and irritated. Should, however, the vagina alone be struck, or even injured by the foreign body introduced, the uterine life then remains uninjured, and the pregnancy runs its course undisturbed. Such must have been the case in this instance, and this is the reason why a threefold introduction of the said instrument, by which the pregnant woman lost only 'some blood,' indubitably from the wound in the vaginal walls, has had no influence upon the fœtus. Accordingly, I answered the first question thus: that the introduction of an iron wire (through a pewter syringe) into the genitals (&c., as above) *may* produce the expulsion of a fœtus. In regard to the second query, In how far an abortion was thus probably intended to be produced? I may remark, that no proceeding such as this is anywhere taught in obstetrics, either as a curative or diagnostic means. The operation for the production of premature labour cannot be advanced as an objection to this. It is not performed in the manner before mentioned, and is in itself nothing else than a scientifically produced premature expulsion of a fœtus," &c. (here follow the indications for this operation), "which, &c., is performed in order to rescue and preserve the life of the mother, which would, by reason of disease or malformation, be endangered by the subsequent delivery at the natural period. In the case now in hand, of the woman N. N., who presented herself before me as a young, healthy, and perfectly well-formed woman, there could be no question of any intent to induce artificially a premature labour according to the rules of science. And therefore for all these reasons there is no other mode of answering this query left me but to say, that an abortion was probably intended to have been produced by the procedure mentioned."

Case CX.—Black Soap with Pepper and Savine as Abortives.

All these were used by the unmarried woman, K. The herb was recognised as *Juniperus sabina*, and the question, which was put thus, "Can savine produce the expulsion of a fœtus?" was answered affirmatively after giving the well-known reasons and limitations. The second question was, "Whether black soap, boiled with much pepper, can also produce the expulsion of a fœtus?" Less notice was taken of the nauseous and stomach-turning qualities of the potash-soap than of the excitant action of the mixture mentioned, if taken in large doses; and, in conclusion, it was said that this mixture *might* produce the expulsion of a fœtus, but that both savine and black soap with pepper had in very many cases failed to produce this effect.

Case CXI.—Black Soap with Plums, and Wort with Laurel Leaves, as Abortives.

The unmarried woman, G., who was in the fourth month of her pregnancy, was imprisoned for attempting to produce abortion by the above-mentioned substances. She confessed once to have taken black soap with dried plums, but she had immediately vomited them. It was stated that a violent and continuous vomiting might possibly produce an abortion, but that this was not generally observed, and that hundreds of pregnant women vomited constantly without aborting. Black soap (the plums were of no consequence) was more frequently employed in this city than other substances, yet not a single case is known to me in which this substance of itself has produced an abortion. The same may be said of a decoction of laurel leaves in wort, which must be regarded as, in this respect, a perfectly harmless draught.

Case CXII.—Powder of Jalap-root and Jalap-soap as Abortives.

Her seducer had given the unmarried woman, D., a black, doughy mass, with instructions for her to swallow it, and was therefore suspected of having attempted to procure abortion. The investigation of the substance showed that it consisted of one part of the

powder of jalap-root and three parts of jalap-soap. There was eight grains of it, and as a third of it had been expended in a preliminary police examination, it might be assumed that the attempt had been made with twelve grains. These must have contained three grains of the powder of the root and nine grains of soap, but as jalap-soap consists of equal parts of the resin of jalap and medicinal soap, the mass must have contained three grains of the powder of jalap-root and four grains and a-half of the resin of jalap with four grains and a-half of soap, the latter being of no consequence. It was now stated that this was not even a strong purgative, not to speak of a means of producing abortion; and it was also mentioned that the apothecaries are permitted by statute to sell so-called laxative or blood-purifying pills, which are composed of precisely these materials.

Case CXIII.—Red Chalk in Brandy as an Abortive.

A female friend had recommended this substance to M., who was illegitimately pregnant. Red chalk, I explained, is nothing else than clay coloured red by a mixture of ferruginous chalk, and as such it is perfectly harmless in regard to the matter in question, and can never be reckoned as a means likely to produce abortion. That brandy in large and frequently repeated doses may certainly produce abortion, is proved by daily experience in regard to drunkards who have become pregnant. Since, however, the woman, M., according to the documentary evidence, has only once swallowed a very small quantity of brandy, mixed with red chalk, or rather, has not even swallowed this, but at once spat it out again, so I must declare that this medicament, as employed in this case, *could not* occasion the expulsion of the fœtus (for so the question was put).

Case CXIV.—A Midwife accused of having repeatedly caused Abortions.

This is the curious case already cursorily referred to (p. 383, Vol. III.). It happened more than eighteen years ago, and during its course the following *ten* questions were put before us. "1. Whether drugs actually exist, by the employment of which a fœtus may possibly be expelled before the completion of the natural time of pregnancy? 2. Whether it is to be assumed from the statements of Mrs. E., that such drugs have been administered to her by the

midwife, S.? 3. Whether the actual expulsion of the fœtus has been the result of this administration? 4. Whether an abortion thrice repeated can leave any traces behind it, particularly on the genitals of the injured female? 5. Whether any such traces are to be found upon Mrs. E.? 6. Whether the genitals of E. are in a normal condition? 7. Whether from the documentary evidence any fault can be found with the proceedings of the midwife, S., in the ordinary discharge of her duty to E.? 8. Whether anything can be thus ascertained confirmatory of the statements of E.? 9. Whether among the drugs found in the possession of the midwife, S., or among those found in the possession of the house-servant, E., there are any which might possibly be fitted to produce the direct expulsion of a fœtus? 10. What is the mental condition of Mrs. E.?" By means of my report, the latter query was brought prominently forward, and this occasioned a fresh judicial investigation, examination of witnesses, &c., and a second report was required from me. From both of these fully detailed and reasoned reports I will only give here concisely the most important points. Mrs. E. lived unhappily with her husband, who was a servant in a drug-shop, from which he had stolen a great quantity of stuff of various kinds, which he kept in his own house, and to these reference is made in the ninth query. Mrs. E. was thirty-seven years of age, and had been married for eight years. Her first pregnancy ended in a premature confinement, but when? could not be ascertained. Subsequently she produced two daughters, each at the full time. Two years ago she again became pregnant, and according to her statement she then applied to the midwife, S:, to get this fœtus expelled. She was said to have employed injections into the genitals, which caused the most violent bodily pains, and the expulsion of the fœtus was followed by a three weeks' illness. The medical man who attended her, certified that this illness was a catarrhal affection attended by aphthous ulceration of the mouth. Next year E. again became pregnant, and then, as well as in a third pregnancy, at the end of this year, the midwife again employed the injections; the first time with the effect of causing the expulsion of the fœtus; the last time this did not occur, for she also tore "something" or "a piece of flesh" out of her body, whereupon another long illness was said to have occurred. After Mrs. E. had laid this accusation, she flung herself one morning into the water, but was rescued, and on account of her violent emotional excitement, she was sent to the Charité Hospital. The midwife, who

was put in prison, where she died during the course of the investigation, all along most consistently declared the accusation of Mrs. E. to be slanderous lies, asserting that her assistance had been each time sought just as the abortion was threatening, and that the injections which she employed were only composed of pure oil of henbane, which she used as a means of alleviating pain, for which purpose she also occasionally gave a few drops of laudanum. At the examination of E., besides the appearance of the breasts and abdominal rings usual in a *multipara*, we found a small prolapse of the posterior wall of the vagina, which was of no consequence, and not the slightest trace of any injury, or anything else anomalous either in the vagina or its neighbourhood. The vaginal portion of the uterus was somewhat low in position, the lips of the os uteri exhibited two small lacerations, the result of the previous deliveries, and there was nothing else remarkable to be found upon the whole body. After we had made a general statement in regard to the means of producing abortion, we had to declare that out of the large number of drugs and medicaments taken out of the possession of E., eight different ethereal oils, castor oil, rhubarb, agaric, saffron, and aloes, were all of them drugs fitted, under certain circumstances, to produce the expulsion of a fœtus. In the further investigation of the case it became more and more evident that our suspicions that Mrs. E. was mentally affected, which were excited at the very first, were actually well founded. And we discovered that her derangement, for her mental condition rapidly developed during her confinement into actual derangement, had originated in a hysterical anxiety for her bodily health. For all her delusions were connected with this subject. When induced to speak of it, she asserted with tears and wringing of her hands, that she was "ruined," that by the proceedings of the midwife she had been mutilated for ever, that the end of her days was at hand, &c. In a little while she began to assert that she was also poisoned, and that by her husband; finally, she declared in plain terms that her second child had been poisoned by the midwife. She would neither be advised nor appeased by any remonstrance that she was neither mutilated, nor affected by any important disease; but that she was, on the contrary, perfectly robust and healthy. She soon became affected with hallucinations; she fancied she heard the voices of men beneath her window, calling to her that she was poisoned, &c. In such a state of matters, I answered the queries put before me as follows: "That there are actual drugs and modes of

action, by the employment of which a fœtus may possibly be expelled before the conclusion of the natural term of pregnancy; that it is, however, improbable that any such means have been employed on E. by the midwife, and that the actual expulsion of the fœtus has been the result of such means; that the expulsion of a fœtus, and particularly the threefold repetition of this, may leave traces, particularly upon the genitals of the female party injured; that, however, these have not been found upon the person of Mrs. E.; [illegible] were in a normal condition; that nothing can be ascertained from the documentary evidence at all objectionable in the proceedings of the midwife while giving her professional assistance—except the use of opiates, which she was not authorized to employ—and that, in particular, nothing can be ascertained from them at all confirmatory of the statements of E.; that amongst the drugs in the possession of the midwife there were none, but several were found amongst those in the possession of the house-servant, E., which were fitted to produce the expulsion of a fœtus: that Mrs. E. labours under a fixed delusion that her husband and the midwife, S., by their attempts to produce abortion and to poison her, have incurably ruined her health." It was subsequently completely confirmed that all these fancied abortions solely existed in the morbid imagination of Mrs. E., and certainly this instance of an accusation of *provocatio abortus*, arising out of a condition of mental derangement, which could not be presupposed, and which had for its result a long investigation of two parties, presents a most unusual example of a medico-legal case.

END OF VOL. III.

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